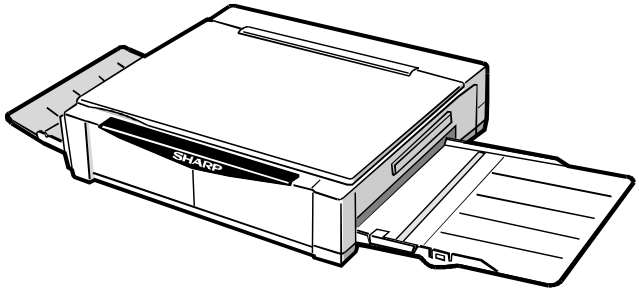
SHARP SERVICE MANUAL

CODE: 00ZZ26SM1E///



MODEL Z-21 Z-26

CONTENTS

[1] BASIC SPECIFICATIONS 1
[2] EXTERNAL VIEW AND OPERATION PANEL FUNCTIONAL DESCRIPTIONS . . 2
[3] UNPACKING AND 5
[4] SUPPLIES 6
[5] INTERNAL STRUCTURE 7
[6] COPY PROCESS 9
[7] OPERATIONAL DESCRIPTIONS 12
[8] DISASSEMBLY, ASSEMBLY 16
[9] SIMULATION AND SELF DIAGNOSICS 22
[10] ADJUSTMENTS 27
[11] DRUM CARTRIDGE REPLACEMENT 30
[12] CIRCUIT DIAGRAM 32

Parts marked with "⚠" is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

CONTENTS

[1] BASIC SPECIFICATIONS 1

[2] EXTERNAL VIEW AND OPERATION PANEL FUNCTIONAL DESCRIPTIONS 2

1. Operation panel 2
2. Display descriptions 3

[3] INSTALLATION AND STORAGE 5

1. Unpacking 5
2. A word on copier installation 5
3. Set-up 5

[4] SUPPLIES 6

1. Drum cartridge, TD cartridge 6
2. How to identify the production control number 7

[5] INTERNAL STRUCTURE 7

1. PWB arrangement 7
2. Motors, solenoids, switches 8
3. Sensors, thermistor, thermostat 8

[6] COPY PROCESS 9

1. Copy process diagram 9
2. Image forming process 9
3. Detailed description of image forming process 9

[7] OPERATIONAL DESCRIPTIONS 12

1. Optical system 12
   - 1-1. Optical system outline 12
   - 1-2. Void area and image loss 12
2. Paper feed section 12
   - 2-1. Paper feed section outline 12
   - 2-2. Outline of paper feed operation 13
3. Drive section 13
4. Document table drive section 13
   - 4-1. Outline 13
   - 4-2. Outline of operation 14
5. Others 14
   - 5-1. Fusing temperature control 14
   - 5-2. Toner empty control 15

[8] DISASSEMBLY AND ASSEMBLY 16

1. Document cover disassembly 16
2. Document table disassembly 16
3. Top cabinet disassembly 16
4. Operation panel disassembly 17
5. Copy lamp PWB disassembly 17
6. AE sensor removal 17
7. Main PWB disassembly 17
8. Drive unit disassembly 18
9. Drive motor disassembly 20
10. Power PWB disassembly 20
11. Lower heat roller disassembly 20
12. Heater lamp disassembly 20
13. Fusing separation pawl disassembly 21
14. Upper heat roller disassembly 21
15. Paper feed unit and resist roller removal (Z-26) 21

[9] SIMULATION AND SELF DIAGNOSTICS 22

1. Simulation 22
2. Self diag functions 26

[10] ADJUSTMENTS 27

1. Lead edge adjustment 27
2. Exposure adjustment 28

[11] Drum cartridge replacement 30

1. Drum cartridge replacement timing 30
2. Drum cartridge replacement procedure 30
   - 2-1. Drum cartridge replacement 30
   - 2-2. Counter clear 31

[12] CIRCUIT DIAGRAM 32

1. BLOCK DIAGRAM 32
2. MAIN P.W.B CPU (IC203) SIGNAL NAME 33
3. AC POWER SUPPLY CIRCUIT: 100V SERIES 34
4. AC POWER SUPPLY CIRCUIT: 200V SERIES 35
5. POWER SUPPLY P.W.B. CIRCUIT – 1/2 (Common section) 36
6. POWER SUPPLY P.W.B. CIRCUIT – 2/2 (For power unit CPWBF1018FC51 only) 37

   BIAS CIRCUIT/P.W.B. 38
7. POWER SUPPLY CIRCUIT – 2/2 (For power unit CPWBF1018FC55, 56 only) 39
8. POWER SUPPLY P.W.B.: 100V SERIES 40
9. POWER SUPPLY P.W.B.: 100V SERIES (EX. 2PIN PLUG): For power unit CPWBF1042FC✳✳ only 40
10. POWER SUPPLY P.W.B.: 200V SERIES (EX. 3PIN PLUG): For power unit CPWBF1043FC✳✳ only 41
11. POWER SUPPLY P.W.B.: 200V SERIES (EX. 2PIN PLUG): For power unit CPWBF1044FC✳✳ only 41
12. MAIN CONTROL CIRCUIT – 1/3 (CPU CONTROL SECTION) 42
13. MAIN CONTROL CIRCUIT – 2/3 (I/O, COPY LAMP CONTROL SECTION) 43
14. MAIN CONTROL CIRCUIT – 3/3 (High voltage power section) 44
15. MAIN CONTROL P.W.B. 45
16. OPERATION CIRCUIT/P.W.B.-1: FOR Z-21 46
17. OPERATION CIRCUIT/P.W.B.-2: FOR Z-26 47
18. COPY LAMP CIRCUIT/P.W.B.-1: 100V SERIES 48
19. COPY LAMP CIRCUIT/P.W.B.-2: 200V SERIES 48
20. MES (Motor Encorder Sensor) CIRCUIT/P.W.B. 48
21. TIMING CHART 49
22. ACTUAL WIRING CHART-1: FOR Z-21 51
23. ACTUAL WIRING CHART-2: FOR Z-26 52

[1] BASIC SPECIFICATIONS

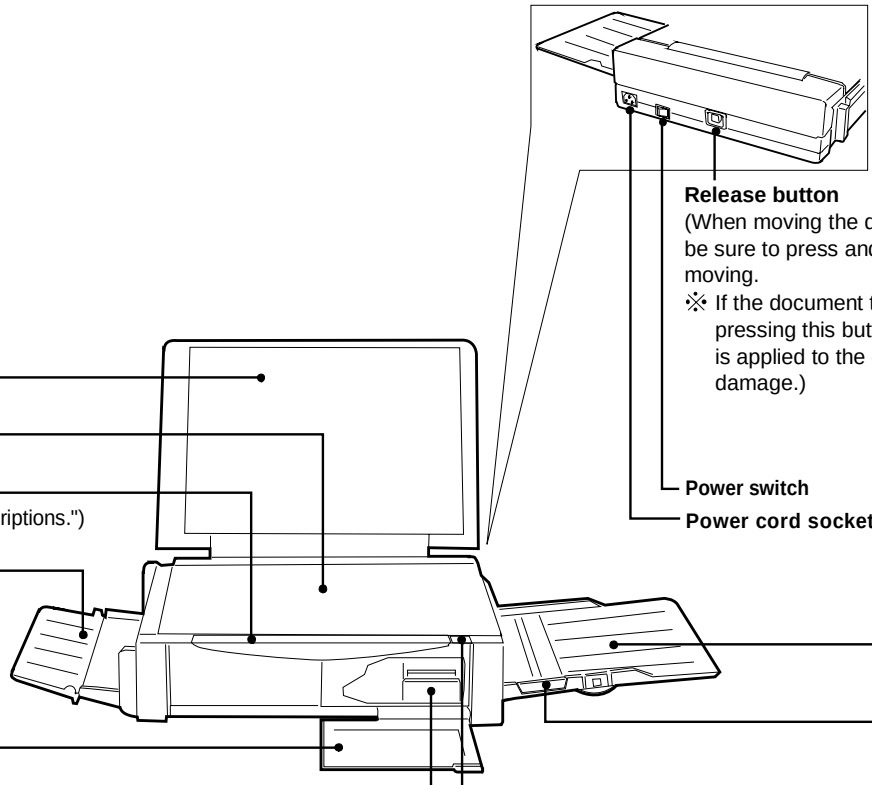
Type:	Portable
Copy system:	Dry, plain paper copier
Document kind:	Sheet, book. Max. weight 2 Kg. (2.2lbs)
Document size:	Max. A4 (210±1 x 2971±1mm) Letter (8-1/2" x 11", 8-1/2" ±5/128" x 11" ±5/128")
Copy size:	A4 A6, 8-1/2" x 11" to 4" x 6"
Copy speed:	Z-26: 3 sheets/min
	Z-21: manual single paper feed only
Fast copy:	① About 19 sec (Except in the auto start mode and the auto power shut off mode, rated voltage, 20 C, 65%RH)
	② About 24 sec (In the auto start mode and the auto power shut of mode, rated voltage, 20 C, 65%RH)
Warm-up time:	None
Multicopying (Z-26 only):	1 to 9 sheets, continuos copy mode (20 sheets), and auto repeat function available.
Copy magnification ratio:	1:1±1%
Exposure system:	Slit exposure by the moving document table
Paper feed system:	Z-26, Multi paper feed and single paper feed by manual paper feed tray;
	Z-21, Manual single paper feed only
Paper feed capacity (multi paper feed):	Overall stack thickness 5.0mm max. About 50 sheets (75g/m^2 (20 lb) paper), about 40 sheets (80g/m^2 (21 lb) paper)
Developing system:	Dry type two-component magnetic brush developing
Fusing system:	Heat roller
Light source:	Tungsten lamp
Power source:	Voltage for each destination ±10%, 15A (50/60Hz common)
Power consumption:	Max. 690W (10WH or less in auto power shut off)
External dimensions:	Z-26, 378(W) x 353(D) x 98(H)mm; Z-21, 362(W) x 353(D) x 98(H)mm;
Installation space:	Z-26, 725(W) x 353(D)mm;
	Z-21, 675(W) x 353(D)mm
Weight:	Z-26: 6.7kg (14.9 lb)(Including 0.7kg developer cartridge)
	Z-21: 6.6kg (including 0.7kg developer cartridge.)
Working environment:	Temperature 10 to 30°C
	Humidity 20 to 85%

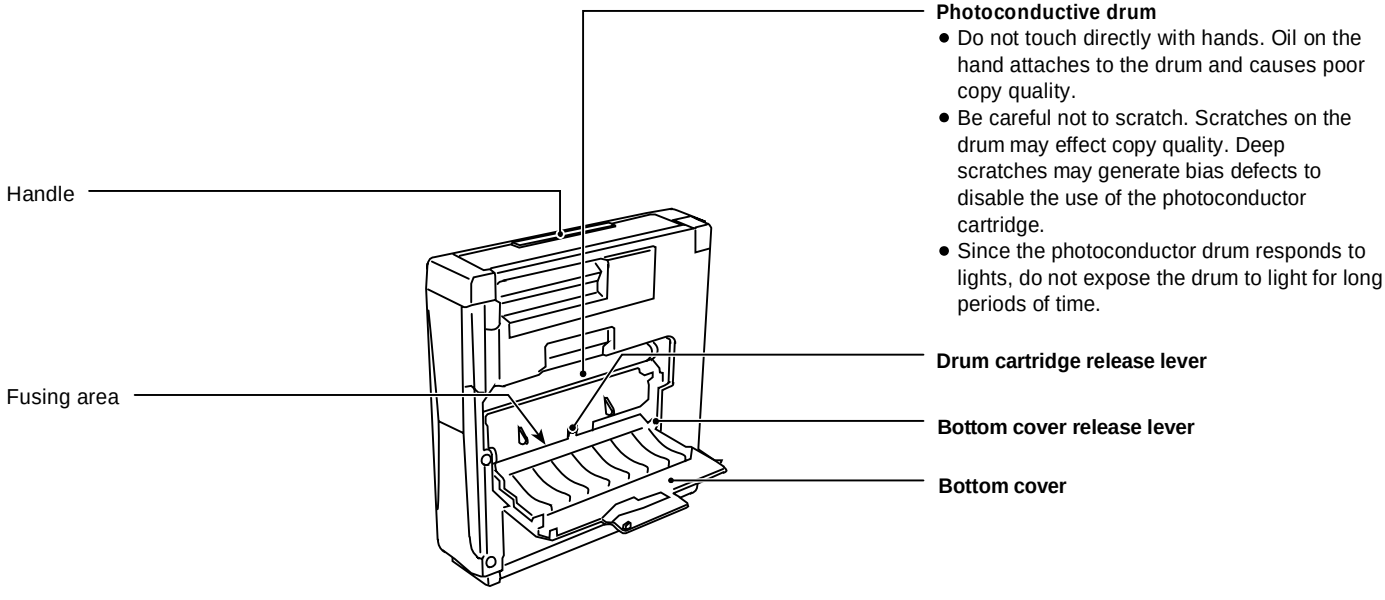
Accessories:	Developer cartridge (black) x 1 pc. (Optionally available for U.S.A., Canada, and Singapore.) Photoconductor cartridge x 1 pc. Power cord Operation manual Guarantee paper(Australia, New Zealand, Canada only) MSDS sheet (U.S.A., Canada, U.K. only) Service label (U.S.A. only) On-site warranty registration sheet (U.K. only) Dust cover (Only in some areas)
Options:	Developer cartridge (black, red, blue) Photoconductor cartridge

[2] EXTERNAL VIEW AND OPERATION PANEL FUNCTIONAL DESCRIPTIONS

1. Operation panel

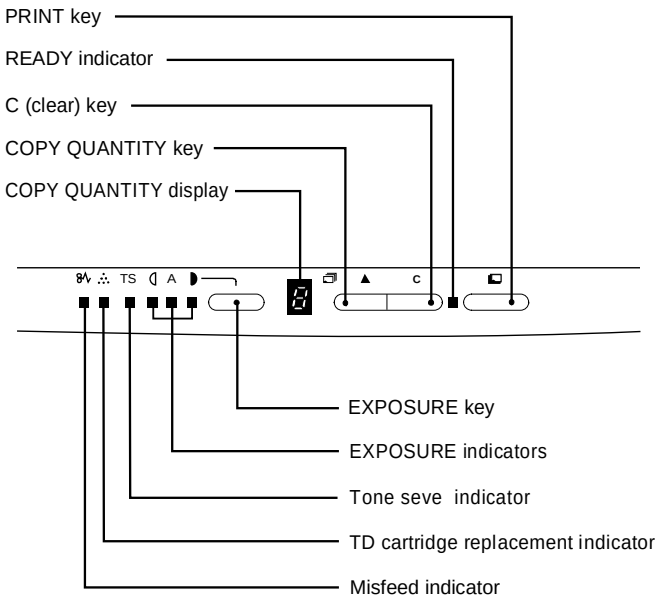
The illustrations show the Z-26.


Rear side
Release button
(When moving the document table manually be sure to press and hold this button while moving.
※ If the document table is moved without pressing this button, an necessary load is applied to the drive section, causing a damage.)
Power switch
Power cord socket
Document cover
Document glass
Operation panel
(Refer to the "2. Display descriptions.")
Exit tray
(Z-26 only)
Paper tray
(Z-26 only)
Paper guide
Front cover
TD cartridge
(Available in three colors: black, red, and blue. For the parts codes and standard life, refer to [4] SUPPLIES.)
Front-cover open button

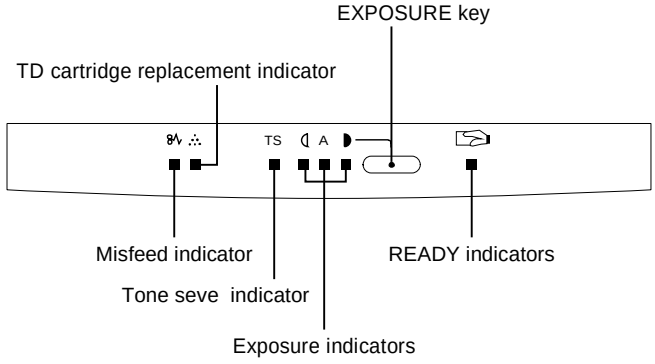

Photoconductive drum
● Do not touch directly with hands. Oil on the hand attaches to the drum and causes poor copy quality.
● Be careful not to scratch. Scratches on the drum may effect copy quality. Deep scratches may generate bias defects to disable the use of the photoconductor cartridge.
● Since the photoconductor drum responds to lights, do not expose the drum to light for long periods of time.
Handle
Drum cartridge release lever
Fusing area
Bottom cover release lever
Bottom cover

2. Display descriptions

Z-26



Z-21

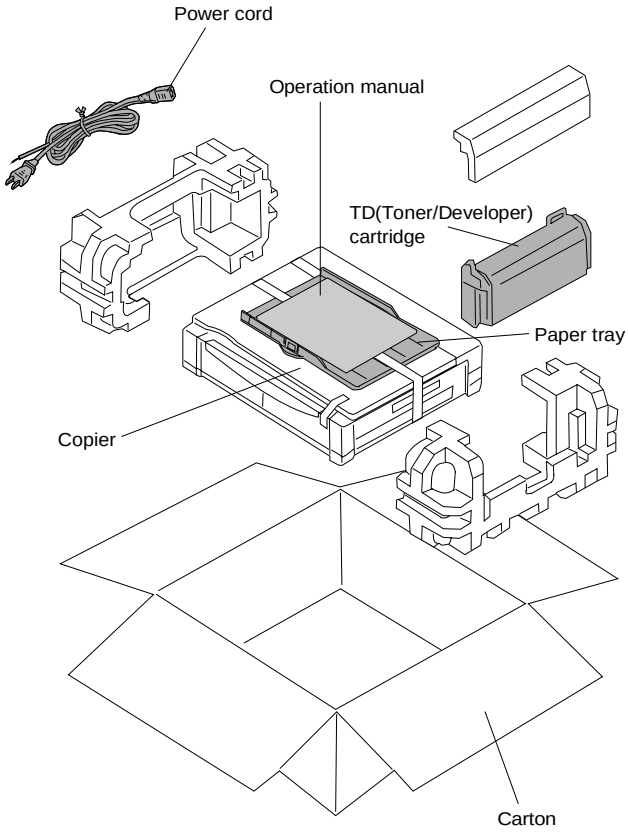


Name	Functions
READY indicator	Z-21: This indicator shows three states: ready, auto start, and auto power shut off mode. Ready state: When the power is turned on, this indicator lights up to show the machine is ready for copy operation, and for key input reception. Auto start: When a paper is inserted into the paper feed port, the READY indicator goes off. In about 5 sec, copying is automatically started.This occurs for the first copy after turning on main switch. Auto power shut off mode: After turning on the power or after completion of copying, if no copy paper is inserted for about 90sec, power supply to the heat roller is turned off. At this time, the READY indicator slowly blinks. The auto power shut off mode is cancelled by pressing any key or inserting of a copy paper. Z-26: This indicator shows three states: ready, copying, and auto power shut of mode. Ready state: Same as the Z-21. Copying: When the PRINT key is pressed with paper set on the paper feed tray, the READY indicator turns off and copying is started in about 5 sec. Auto power shut off mode: In the Auto Power Shut OFF mode, copy will be started in the copy condition set on the display when you press a copy key which can be canceled by entering any key.
CLEAR key (Z-26 only)	• Performs cancelation of the multi copy set quantity and the auto repeat function, and suspends copying before and during copying. When the key is pressed during multi copying, copying is terminated and the copy quantity display shows "0". • When the clear key is pressed for 5 sec, the content of the total counter is displayed, starting with the digit of ten thousands one by one on the copy quantity display.
COPY QUANTITY key (Z-26 only)	• This key allows setting of copy quantity from 1 to 9 and of C mode (20-sheet continuous copying). • When this key is kept down, the copy quantity display counts up. After the count reaches 9, "C" is displayed next. • The display counts down during continuous copying to show the rest of the copies to be made. When, however, the "C mode" is set, count down is not performed. In this case, press the COPY QUANTITY key during copying to display the copied number. (The copied number is displayed only when it is 9 or less. If it is 10 or more, "C" is displayed.)
COPY QUANTITY display (Z-26 only)	• Displays the set copy quantity, the self diag code, and the simulation number. • The set copy quantity is automatically cleared to "0" if no key input and no copy operation is made for 60 sec after completion of copying.

<table>
<tr><th>Name</th><th>Functions</th></tr>
<tr><td>EXPOSURE key</td><td>
• This key allows setting of auto exposure (one step) and manual exposure (three steps: Light, Normal, and Dark), and the toner save mode.
• Display cycle of each exposure mode.
<table>
<tr><th>Exposure cycle</th><th>Display</th></tr>
<tr><td>1. Auto</td><td>Toner save Light [Auto] Dark
○ ○ ● ○</td></tr>
<tr><td>⬇
2. Manual (Normal)</td><td>Toner save Light [Auto] Dark
○ ● ○ ●</td></tr>
<tr><td>⬇
3. Manual (Light)</td><td>Toner save Light [Auto] Dark
○ ● ○ ○</td></tr>
<tr><td>⬇
4. Manual (Dark)</td><td>Toner save Light [Auto] Dark
○ ○ ○ ●</td></tr>
<tr><td>⬇
5. Toner save mode</td><td>Toner save Light [Auto] Dark
● ○ ○ ○</td></tr>
<tr><td>⬇
6. Auto
＊ Repated</td><td>Toner save Light [Auto] Dark
○ ○ ● ○</td></tr>
</table>
• Change in exposure setting is valid after turning on the COPY key and the PRINT key (after insertion of a copy paper in the case of Z-21) until the table enters scanning operation.
• When the toner save mode is selected, the toner concentration is made smaller than in the standard mode, saving the toner consumption by from manual (standard) about 20%.
• The copy lamp light quantity can be adjusted to cope with deterioration of the photoconductor or dirt in the optical system (User simulation).
<<Procedure>>
① Press and hold the EXPOSURE key for 10 sec in the ready state or in the auto power shut off mode.
② The currently selected LED of the three LEDs of copy exposure blinks, and the READY indicator turns off. (At initializing, "A" blinks.)
③ Set a desired exposure with the EXPOSURE key, and wait for 5 sec.
④ The machine goes into the ready state.
⑤ When the power is turned off/on during simulation, exposure is set to the level just before turning off the power. The CLEAR key input is not accepted during simulation.
• If there is no key input and no copy operation, the set copy exposure is automatically cleared and the display returns to "A".
</td></tr>
<tr><td>EXPOSURE indicator</td><td>
• Displays the value set by the EXPOSURE key.
• In the case of Z-21, it is used also for counter read and when trouble occurs.
</td></tr>
<tr><td>Toner save mode display lamp</td><td>
• Displays the toner save mode selected by the copy density key.
</td></tr>
<tr><td>TD cartridge replacement indicator</td><td>
• When toner empty is detected at the begining of a copy run, the TD cartridge replacement indicator lights up and the machine enters toner supply operation for max. 60 sec. (The document table reciprocates max. 3 times.) If toner supply is completed, the indicator turns off. If toner empty is detected again, the indicator blinks to stop the machine. After this state, when the power is turned off/on and a copy paper is inserted, toner supply (max. 60 sec) operation is repeated. After completion of the operation, when toner empty is detected, the machine is stopped. The user must replace the TD cartridge with a new one.
• When toner empty is detected during copying, toner supply is performed (without display) when the table returns.
</td></tr>
<tr><td>Misfeed indicator</td><td>
• When a misfeed occurs inside the machine, the misfeed indicator blinks. Open the bottom cover, remove the jam paper, close the bottom cover, and set the machine horizontally. Then turn off/on the power, and the indicator will turn off. If a jam paper is detected inside the machine, the indicator blinks again.
When the main body is put aside with the power ON, the indicator blinks. This can be cancelled by turning off/on the power in the horizontal position.
</td></tr>
</table>

[3] INSTALLATION AND STORAGE

1. Unpacking

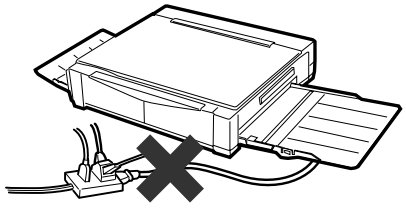


※ Save the carton and packing materials. The carton and packing can be re-used for transporting the machine, should it be necessary.

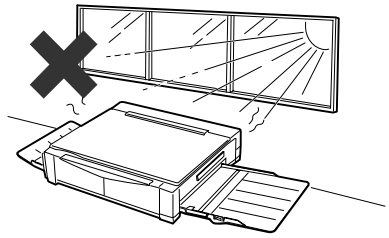
2. A word on copier installation

Improper installation may damage the copier. Please note the following during initial installation and whenever the copier is moved.

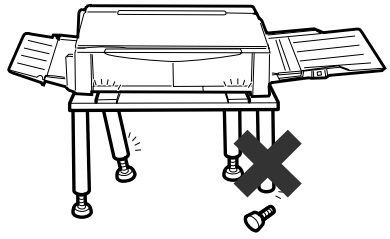
1. Be sure to use a correctly rated power supply and to ground the copier.



2. Do not plug the copier into an outlet used by other appliances.
3. Do not install your copier in areas that are:
   - damp, humid, or very dusty;
   - exposed to direct sunlight;
   - poorly ventilated;
   - subject to extreme temperature or humidity changes, e.g., near an air conditioner or heater.



4. Although the copier can be stored standing up, place the copier on a firm, level surface when using it.



A small amount of ozone is produced within the copier during operation.

The emission level is insufficient to cause any health hazard.

NOTE:

The present recommended long term exposure limit for ozone is 0.1 ppm (0.2 mg/m^3) calculated as an 8 hr. time-weighted average concentration.

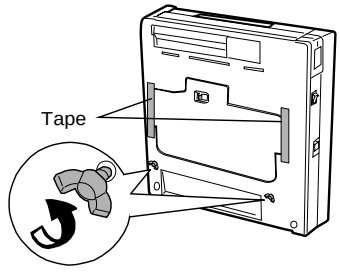
However, since the small amount that is emitted may have an objectionable odor, it is advisable to place the copier in a ventilated area.

CAUTIONS:

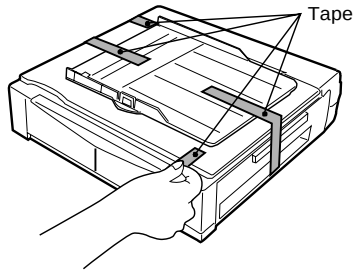
1. Do not expose the photoconductive drum to direct sunlight, and do not touch the photoconductive drum. Scratches or smudges on the drum will cause dirty copies.
2. The fusing area is hot. Exercise care when inspecting this area.
3. If the copier is moved from a cool place to a warm place, condensation may form inside the copier. Operation in this condition will cause poor copy quality and malfunctions. Leave the copier at room temperature for at least 2 hours before use.

3. Set-up

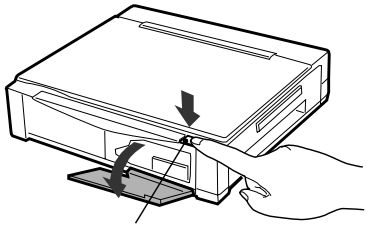
1. Remove the copier from the bag and remove the two wing screws from the bottom side of the copier.
   - Also remove the two pieces of tape securing the bottom cover.



2. Remove all pieces of tape from the copier.

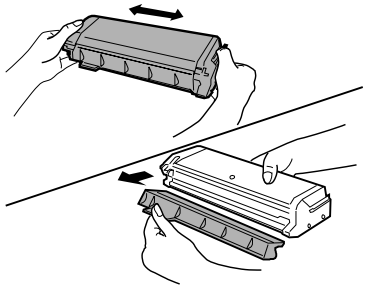


3. Press the front-cover open button to unlatch the front cover and open it.

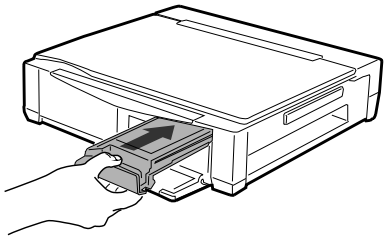


Front-cover open button

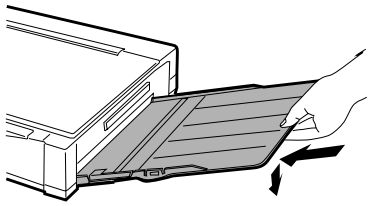
4. Remove the TD (Toner/Developer) cartridge from the bag.
5. Shake the TD cartridge horizontally four or five times.
6. Remove the cover from the TD cartridge.
   - Save the TD cartridge cover. This should be used to pack the TD cartridge if the copier must be shipped for servicing or in case you move.



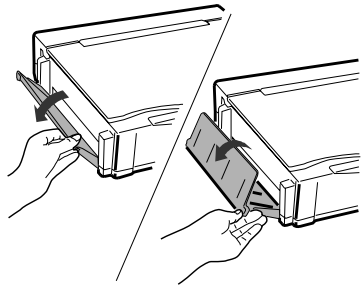
7. Slide the TD cartridge in until it locks in place.



8. Close the front cover.
9. Fit the paper tray in the copier by inserting it at an upward angle into the grooves on the sides of the paper feed slot. (Z-26 only)



10. Unfold and open the exit tray. (Z-26 only)

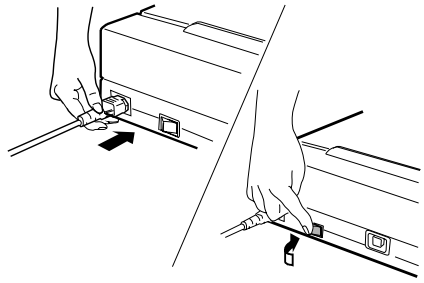


11. Plug the power cord into the copier and then plug the other end into the nearest outlet.

NOTE:

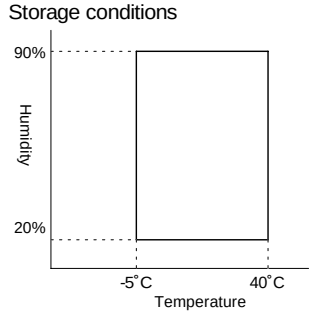
Be sure to insert the power cord firmly.

12. Turn the power switch on.
    - When making a copy for the first time after the set-up, the document glass will slide back and forth and the ⁂ indicator will light for up to one minute. Then, copying will start.



[4] SUPPLIES

1. Drum cartridge, TD cartridge

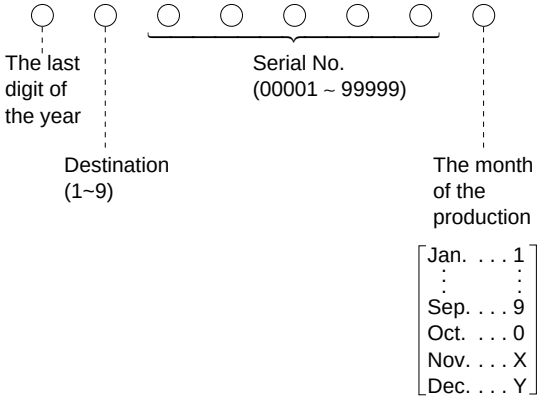
Item	Contents	Life Approx.	Mode Number	Storage conditions
Drum cartridge	Drum cartridge x 1 Drum Replacement Procedure Manual x 1	10,000 copies	ZT-20DR	Storage conditions 
Toner/Developer Cartridge	Toner/Developer Cartridge (Black)	※ 2,000 copies	ZT-20TD1	
	Toner/Developer Cartridge (Red)	※ 1,500 copies	ZT-20TD2	
	Toner/Developer Cartridge (Blue)	※ 1,500 copies	ZT-20TD3	

※ A4 or letter, white-black ratio of 5%

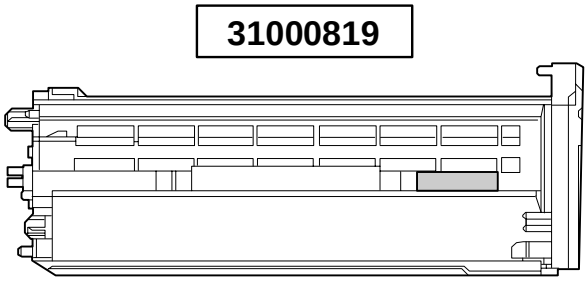
2. How to identify the production control number

<<TD cartridge>>

The control number label is on the top of the TD cartridge, which shows the year and the month of the production.

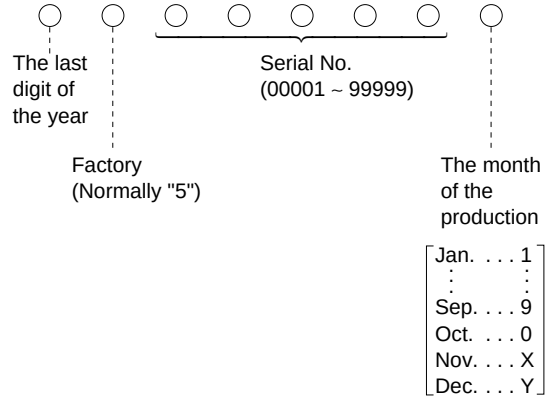


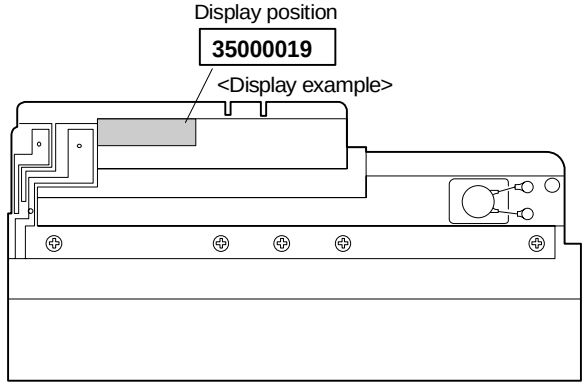
Destination	No.
Japan Black option	1
Outside Japan Black option	2
Japan Red option	3
Outside Japan Red option	4
Japan Blue option	5
Outside Japan blue option	6
Japan Same package	8
Outside Japan Same package	9



<Drum cartridge>

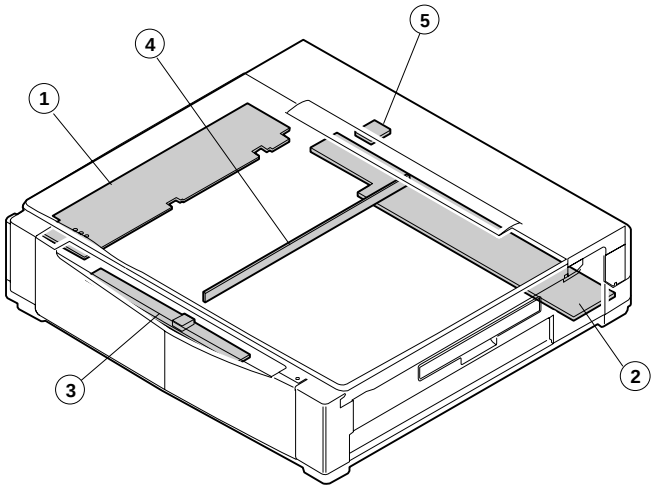
The control number label is on the top of the drum cartridge, which shows the year and the month of the production.





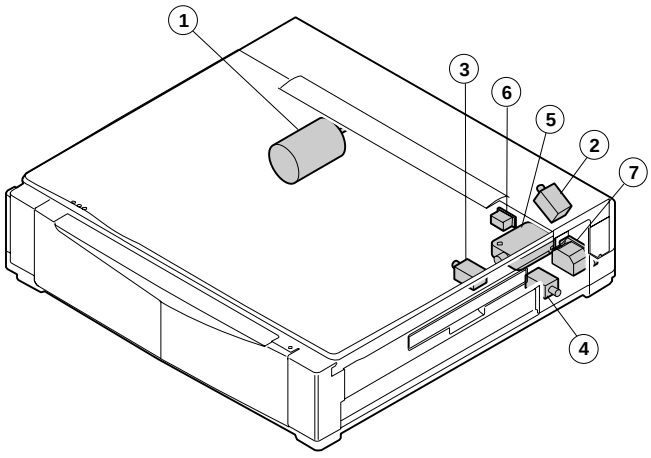
[5] INTERNAL STRUCTURE

1. PWB arrangement



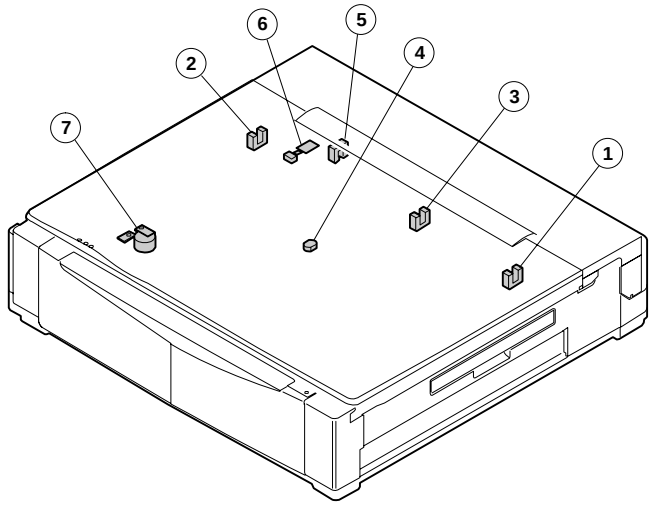
	Name	Functions
①	Main PWB	In addition to overall function control, this PWB also functions as the copy lamp control circuit and the high voltage output circuit (except for developing bias). The paper exit sensor in on this PWB also.
②	Power PWB	This PWB supplies power to each load. It is equipped with the power switch, the power inlet, the interlock switch, document table sensor, and the paper entry sensor and the circuit which generates developing bias.
③	Operation PWB	Differs in the Z-21 and in the Z-26.
④	Copy lamp PWB	Different from the conventional models, the PWB is equipped with a fuse bulb.
⑤	Motor control PWB	Pulses to control the drive motor and the paper start (PS clutch ON timing) are generated by the encoder attached to the drive motor shaft, and are converted into electrical signals.

2. Motors, solenoids, switches



	Name	Circuit diagram code	Type	Function
①	Drive motor	MM	DC motor	Drives all loads.
②	Toner supply solenoid	THS	Solenoid	Toner supply is performed when the solenoid is on.
③	PS solenoid	RRS-A RRS-B	Solenoid	When the solenoid is on, the paper which is resisted at the paper gate (Resist roller) is fed
④	Paper feed solenoid	PFS (Paper Feed)	SOlenoid	Used only in the Z-26. When the solenoid is on, the paper takeup roller is driven.
⑤	Interlock switch	—	—	By opening the bottom cover or remove the TD cartridge, the interlock switch functions to stop the power supply.
⑥	Power switch	MSW	—	—
⑦	Power inlet	Inlet	—	AC cord connecting terminal

3. Sensors, thermistor, thermostat

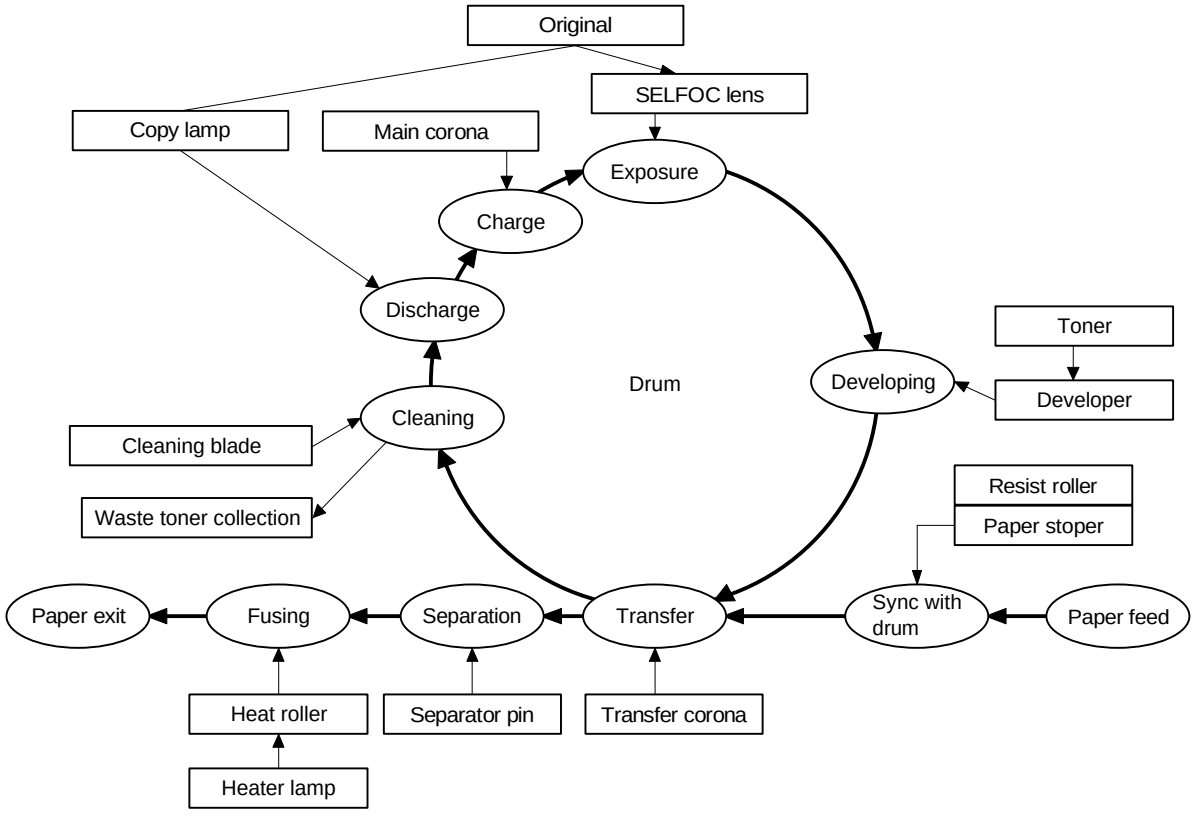


	Name	Circuit diagram code	Type	Function
①	Paper feed sensor	PID (Paper in detector)	Photo sensor	Senses paper entry.
②	Paper exit sensor	POD (Paper out detector)	Photo sensor	Senses paper exit.
③	Document table sensor	TPS (Table position sensor)	Photo sensor	Senses the document table position.
④	AE sensor	AESP (Auto exposure sensor)	Photo sensor	Reads the document density.
⑤	Motor encoder sensor	MREP (Motor rotary encoder port)	Photo sensor	Reads the encoder pulse.
⑥	Thermistor	HLTH (Heat roller thermistor)	Thermistor	Senses the fusing temperature.
⑦	Thermostat	—	Thermostat	When the fusing temperature rises abnormally, the thermostat opens to stop power supply to the heater lamp. (165°C type employed.)

[6] COPY PROCESS

This model uses an OPC. (photoconductor) drum to form an image on it.

1. Copy process diagram



2. Image forming process

Brief description of image forming process:

A charge is applied on the entire drum surface, onto which the image of the original is projected by means of the copy lamp selfoc. Where the light strikes the drum, the charge dissipates and an electrostatic latent image is formed on the drum surface. Toner is attracted to the electrostaticly charged areas of the drum to form a visible image.

Step 1. Photoelectrical discharge (residual charge on the drum surface is neutralized)

Step 2. Change (a latent image is formed on the drum surface)

Step 3. Exposure

Step 4. Developing (the latent image on the drum is developed into a visible image with toner)

Step 5. Transfer (the visible image, toner image, on the drum surface is transferred onto the copy paper)

Step 6. The potential on the transfer paper is neutralized, and the paper is separated.

Step 7. Cleaning (residual toner on the drum surface is collected by the cleaning blade)

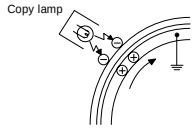
Step 8. Photoelectric discharge (residual charge on the drum surface is neutralized)

3. Detailed description of image forming process

Step 1. Photoelectric discharge

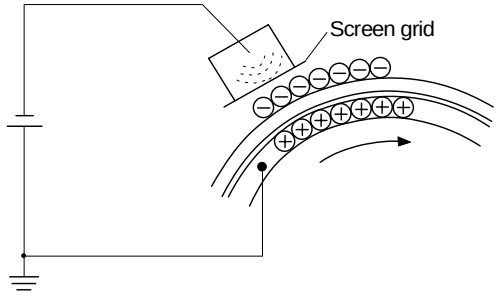
Prior to charging, light from the copy lamp is projected over the drum surface to reduce electrical resistance of the OPC layer and neutralize any residual charge.

As the electrical resistance is decreased, the positive charge in the aluminum layer neutralizes the negative charge in the OPC layer.



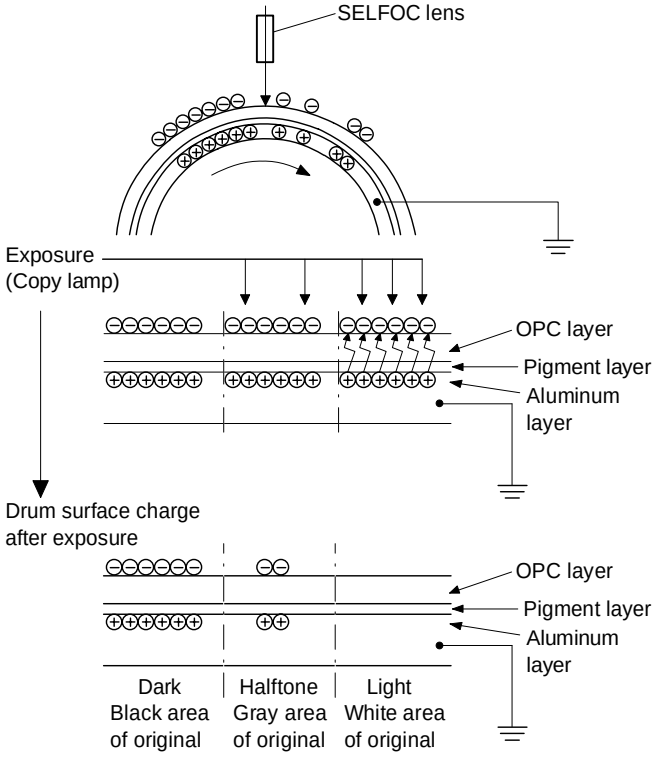
Step 2. Charge

A uniform negative charge is applied over the OPC drum surface by the main corona unit. (Controlled by the grid bias.)



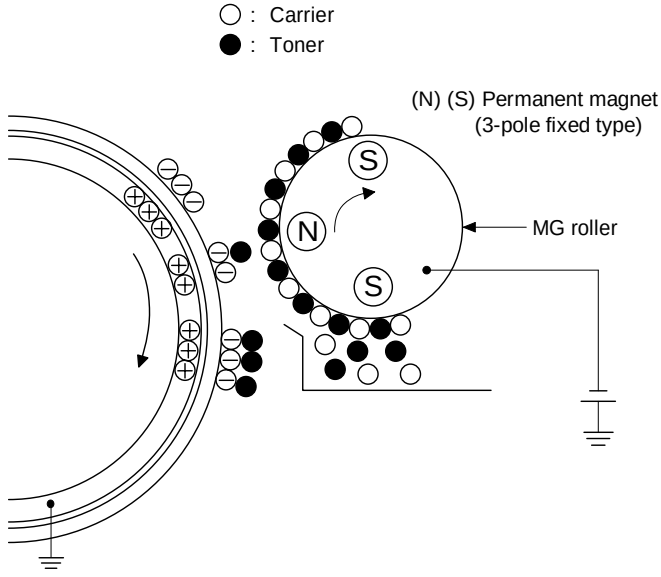
Step 3. Exposure (copy lamp and SELFOC lens)

The image of the original is projected onto the OPC drum through the SELFOC lens by means of the light from the copy lamp. Where light strikes the drum light areas of the original, the electrical resistance in the OPC layer decreases and the charge dissipates. This forms the electrostatic latent image on the drum surface.



Step 4. Developing

Toner is attracted from the MG roller to the latent image on the drum surface forming a visible image. With this two component magnetic brush type developing method, the toner is charged positive because of friction with the carrier and is, therefore, attracted to the deposits the negatively charged areas (imaged areas) on the drum surface.



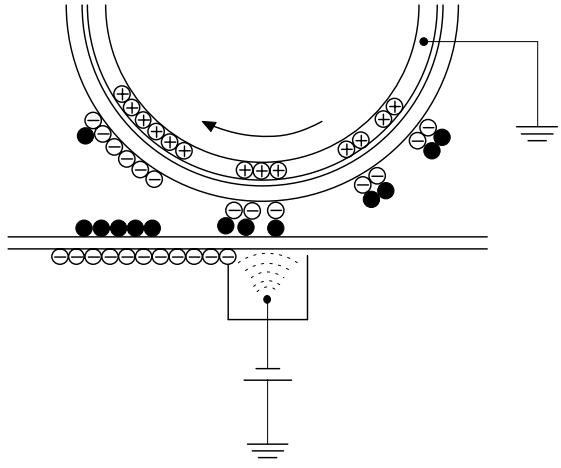
In this process, a bias potential is applied to the MG roller (magnet roller) to prevent the toner from being attracted to the residual potential (approx. –80 to –100V) in the non-imaged areas after exposure.

Step 5. Transfer

The visible image (toner image) on the drum is transferred onto the copy paper.

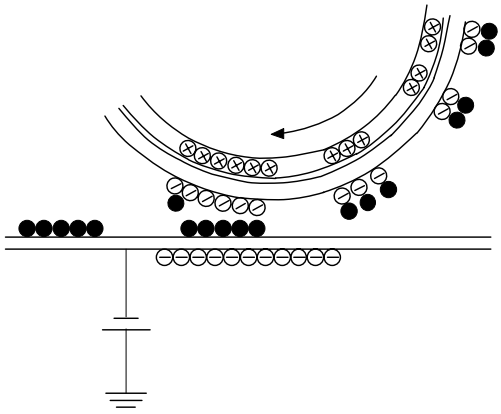
A high potential is applied to the back of the copy paper by negative corona discharge, making the attraction between the drum and toner less than the attraction between the copy paper and toner. As a result, toner adheres to the copy paper.

The resulting transfer efficiency is 70 to 80% therefore 20 to 30% of the toner remains on the drum after transfer, residual toner.



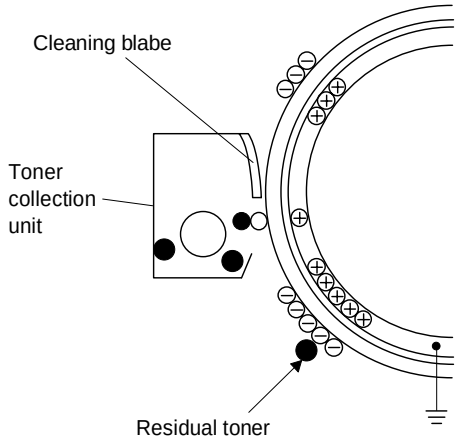
Step 6. Separation

The paper is negatively charged (About –3KV) by the discharge pin to neutralize the potential, separating the paper from the drum.



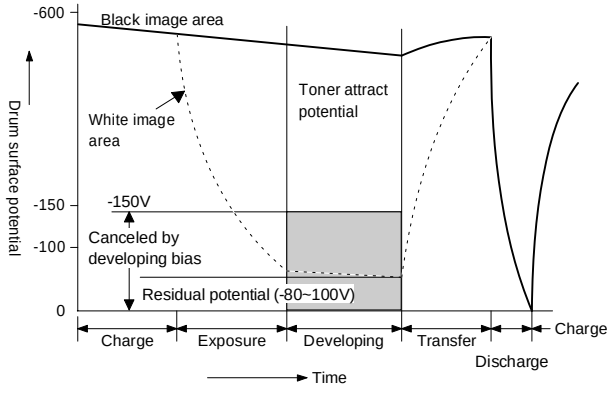
Step 7. Cleaning

The residual toner remaining on the drum is collected by the cleaning blade and carried into the toner collection unit.



Step 7. (same as step 1)

<Transition in the drum surface potential at each step>



Because of the developing bias, toner is not attracted to the non-image areas of the drum surface. If, for any reason, the developing bias fails, the toner will be attracted to the residual charge on the drum producing background in the non-image areas.

[7] OPERATIONAL DESCRIPTIONS

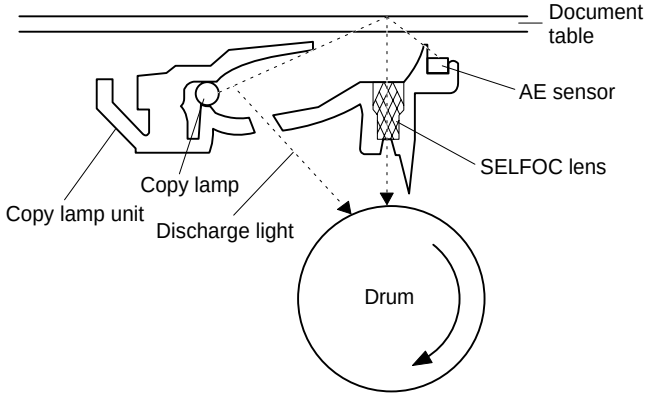
1. Optical system

1-1. Optical system outline

Light source: Fuse bulbs are used as the light source. Eight fuse bulbs are arranged in series on the PWB. The temperature fuse is also installed on the PWB. The copy lamp also has the function as the discharge lamp to attenuate the potential on the drum.

Lens: A selfoc lens is employed.

AE sensor: A photo sensor is employed to read document density for improving maneuverability and stabilizing picture quality.

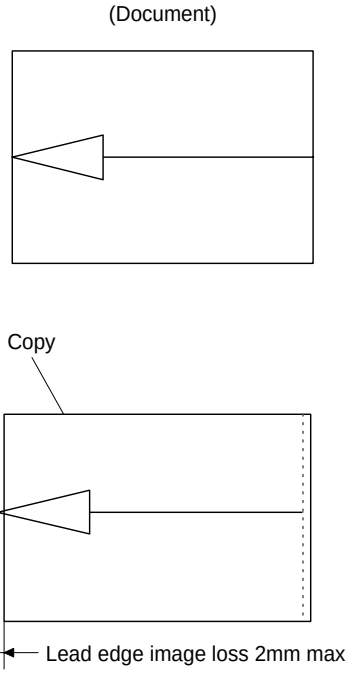


1-2. Void area and image loss

① Void area: With the original cover open, make a copy without an original in place. The white area on the copy is called "void area."

② Image loss: Loss (or area) of the image lost on the copy.

③ Specified values of void area and image loss



Void area	Lead edge	1 ~ 5mm max.
Image loss	Lead edge	2mm max.

2. Paper feed section

2-1. paper feed section outline

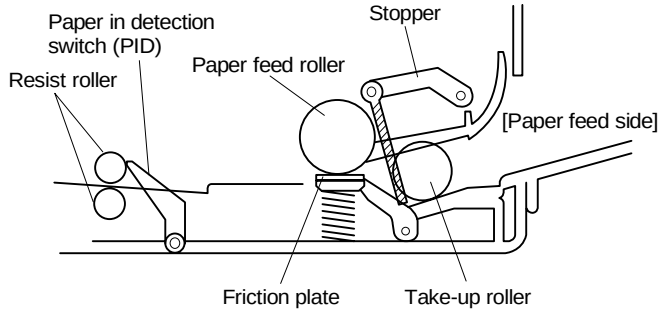
The paper feed section differs greatly from the models: the Z-21 and the Z-26.

In the Z-26, max. 50 sheets of paper can be set on the multi tray, and max. 20 sheets of multi copy run is available.

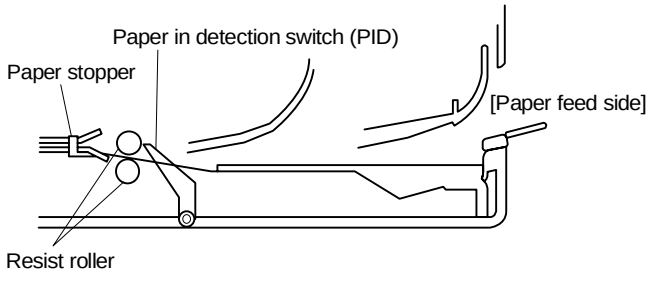
In the Z-21, only single manual feed is available.

The figure below shows the cross section of the Z-21 and the Z-26.

<Z-26>



<Z-21>



2-2. Outline of paper feed operation

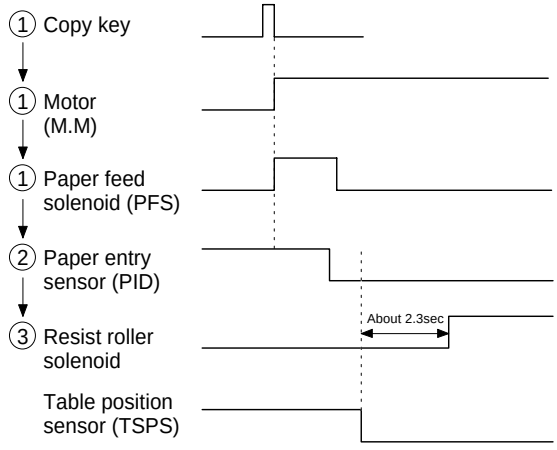
<<Z-26>>

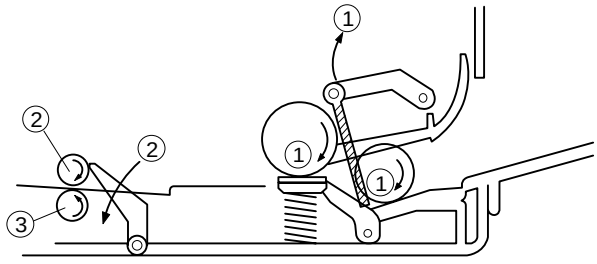
① When the COPY key is pressed, the motor starts rotating. At the same time, the paper feed solenoid turns on to raise the stopper.

② Paper is fed and the paper entry sensor (PID) is turned on.

③ The paper is stopped by the resist roller. After 2.3 sec from driving the table position signal (TPSP) LOW, the resist roller solenoid turns on to rotate the resist roller, transporting the paper to the transfer section.

(Timing chart: Paper feed operation)





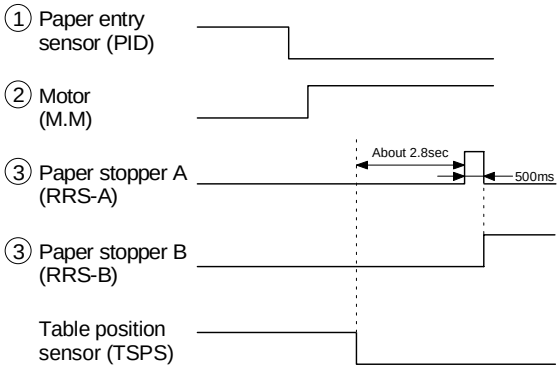
<<Z-21>>

① When a paper is inserted into the paper feed port, the paper entry sensor turns on.

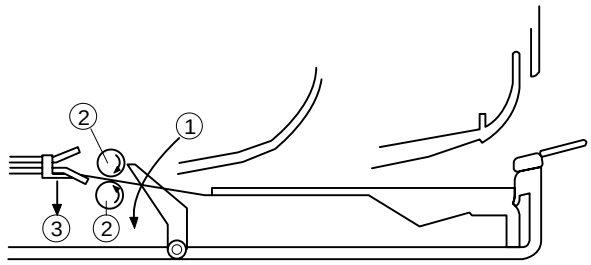
② The motor starts rotating to rotate the resist roller, transporting the paper to the paper stopper position.

③ 2.8sec after rising of the table position sensor (TPSP), the paper stopper solenoid turns on to allow the paper to be transported to the transfer section.

(Timing chart: Paper feed operation)

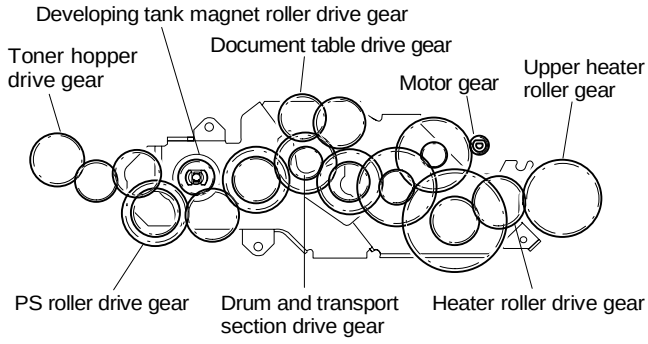


※ RRS-A and RRS-B are signal timings.
The paper stopper turns on at RRS-A timing.



3. Drive section

All drive operations in this model are performed by one motor. The motor drive is transmitted through the drive unit to each section (the paper feed section, the developing section, the drum unit, the document table, the fusing section, and the fan unit).

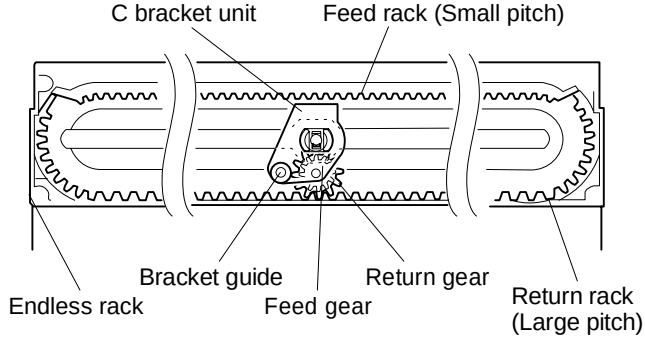

Developing tank magnet roller drive gear
Toner hopper drive gear
Document table drive gear
Motor gear
Upper heater roller gear
PS roller drive gear
Drum and transport section drive gear
Heater roller drive gear

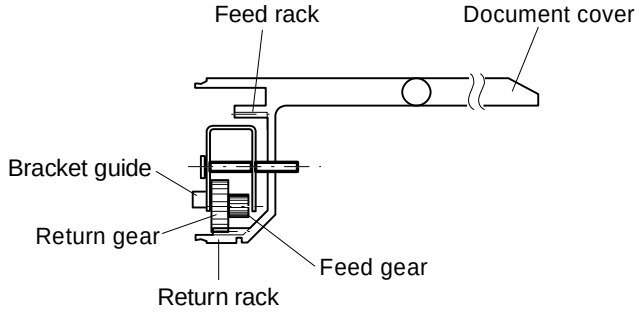
4. Document table drive section

4-1. Outline

The document table is driven by a gear unit and the endless rack which is integrated with the document table. A clutch is not used for selecting feed and return.

The structures of the endless rack and the C bracket unit (gear unit) are described in the following.

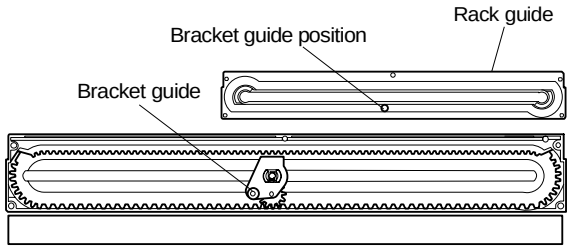




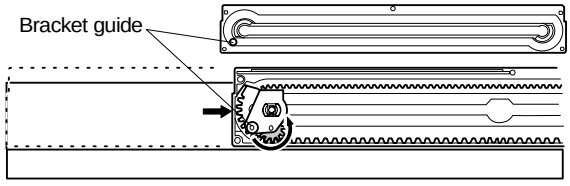
The endless rack is composed of the feed rack and the return rack as shown in the figure above. The drive gears are utilized two ways: the feed gear set and the return gear set. The bracket guide moves along the groove in the rack cover. These parts provide feed and return operations while keeping the same gear rotating direction.

4-2. Outline of operation

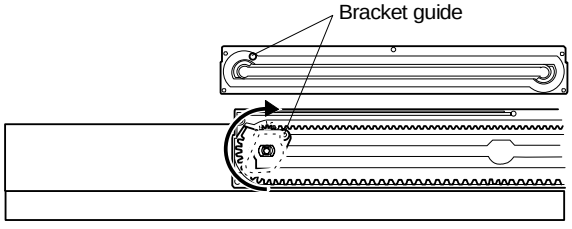
Positions of the racks, the bracket guide, and the C bracket are shown below:



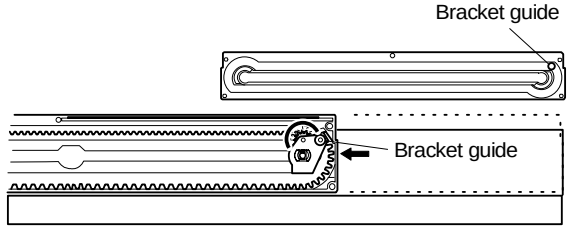
[When ready]



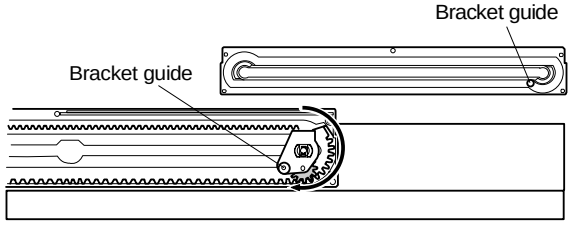
[Move to the document scan start position]



[Document scan (feed) start]



[Document scan (feed) end]



[Move to stop position]

5. Others

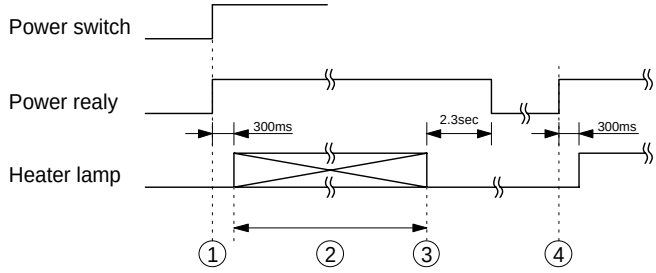
5-1. Fusing temperature control

① When the power is turned on, the power relay is also turned on at the same time. After 300ms, the heater lamp turns on (ready state).

② During copying, the fusing temperature is controlled to about 149°C.

③ After turning on the power or after completion of copying, if there is no key input for 90 sec, the power supply to the heater lamp is stopped. (Auto shut off function)

④ In the auto shut off mode, if any key input is made or a paper is inserted (in the case of Z-21), the power relay is turned on to turn on the heater lamp (ready state).



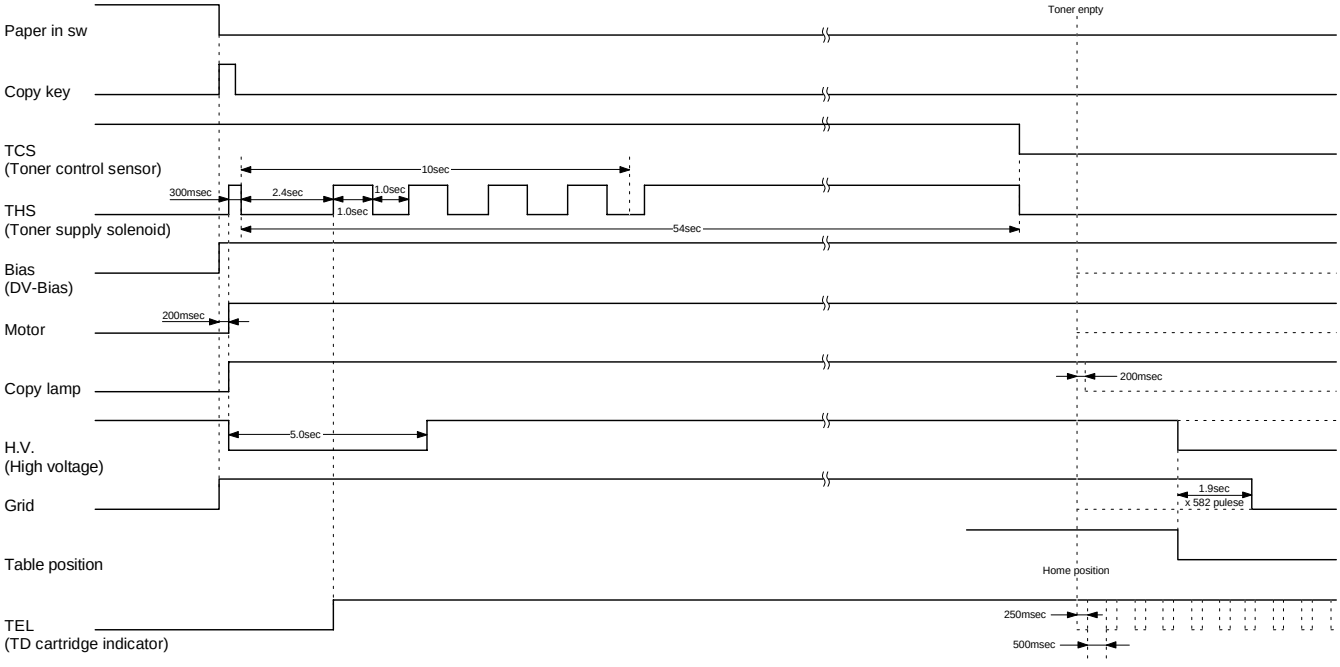
When the heater lamp temperature rises above 180°C, a high temperature trouble is displayed ("H3" lamp lights up (Z-26); all lamps except for READY lamp light up (Z-21)), and power supply to the heater is stopped.

5-2. Toner empty control

① When the paper entry sensor (Z-21) or the COPY key (Z-26) is turned on, if the toner control sensor output (TCS) is HIGH, the toner supply solenoid (THS) is turned on to supply toner.

② If TCS is not driven LOW after 60 sec of toner supply, the developer cartridge replacement lamp is lighted and the machine is stopped.

③ In the case of the Z-26, if the toner control sensor signal keeps HIGH during 12 sheets of multi copying, the developer cartridge replacement lamp is lighted and the machine is stopped.



[8] DISASSEMBLY AND ASSEMBLY

<<Note for disassembly and assembly>>

(1) When disassembling, disconnect the power plug. Never remove or assemble the PWB or connectors with the power ON.

(2) Be careful not to drop small parts and screws inside the machine. It may cause damage.

(3) Do not pull on wires of the connector, or wires may be damaged. Be sure to hold the both sides of the connector when pulling.

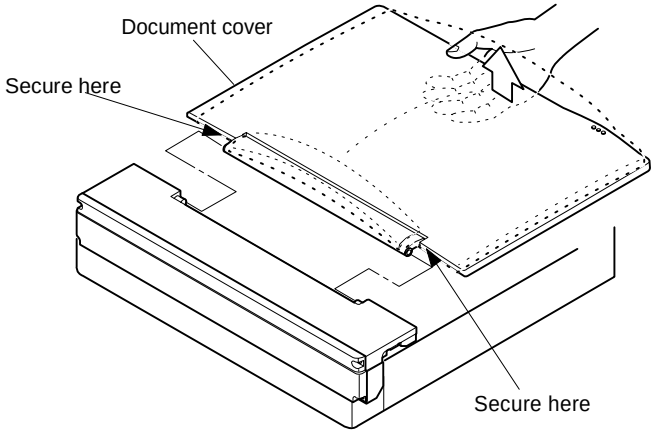
(4) Descriptions on the cable holder and harness band are omitted unless special note is required. When these parts must be separated in disassembly, be sure to note the attaching positions of them.

(5) Use care in wire treatment. Do not allow pinches of lead wires.

(6) Do not tighten the screws too much. Avoid breaking the screw threads.

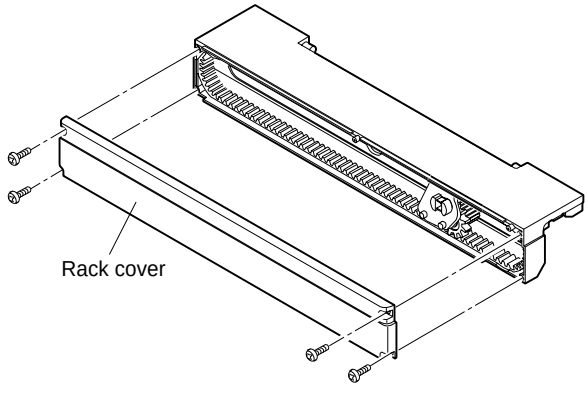
1. Document cover disassembly

- Warp the center portion of the document cover and lift it upwards.



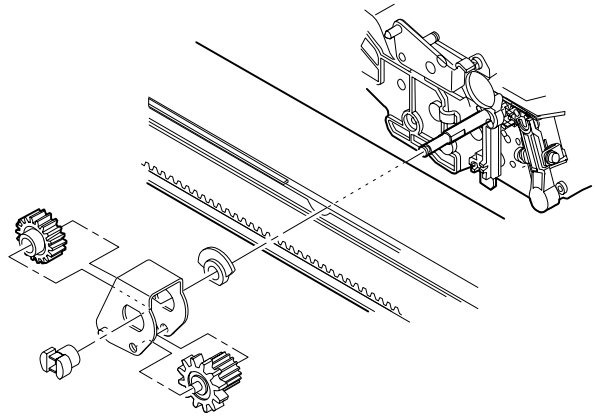
2. Document table disassembly

① Remove four screws which are fixing the rack cover, and remove the rack cover.



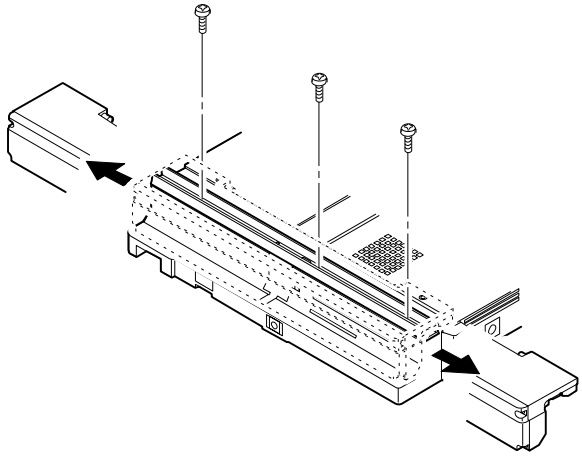
② Remove the rack gear bracket.

※ Note position of each component for reassembly.



③ Slide the document table, and remove three screws which are fixing the sliding rail to the top of the machine.

④ Slide the table backwards to remove.



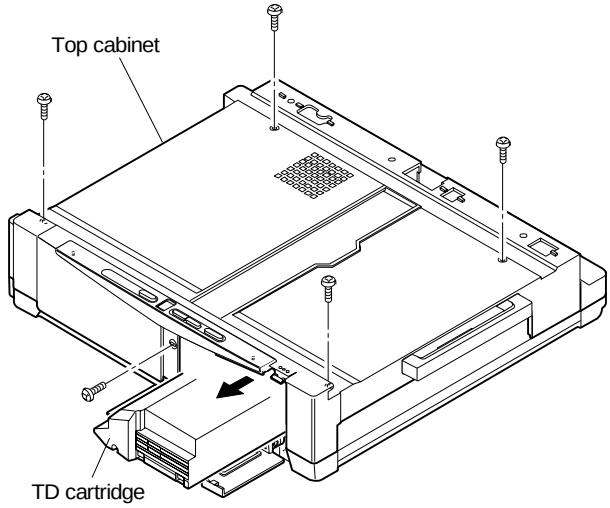
3. Top cabinet disassembly

① Remove the document table.

② Open the front door, and remove the TD cartridge.

③ Remove the five screws which are fixing the top cabinet.

④ Remove the top cabinet upwards.

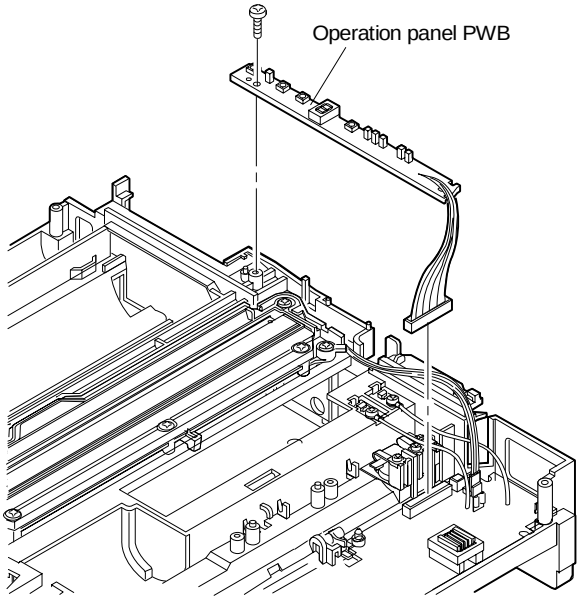


4. Operation panel disassembly

① Remove the document table.

② Remove the top cabinet.

③ Remove the screw which is fixing the operation panel, and remove the connector.



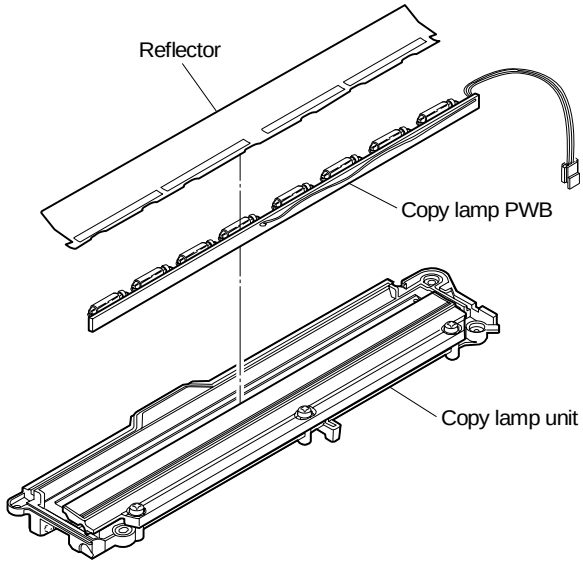
5. Copy lamp PWB disassembly

① Remove the document table.

② Remove the top cabinet.

③ Remove the reflector. (Be careful not to touch the reflection section of the reflector.)

④ Remove the copy lamp PWB. (Do not touch the fuse bulb of the lamp directly with your hand. It may result in a shortened life and uneven exposure.)



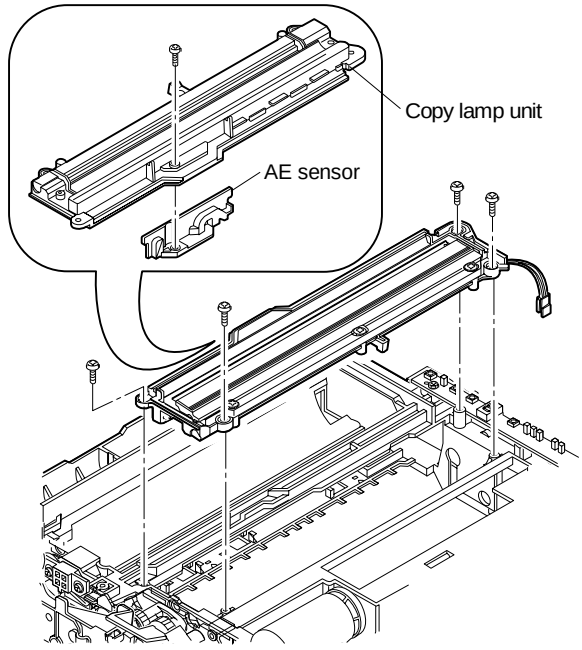
6. AE sensor removal

① Remove the document table.

② Remove the top cabinet.

③ Remove the copy lamp unit (four screws).

④ Remove the screw which is fixing the AE sensor, and remove the AE sensor.



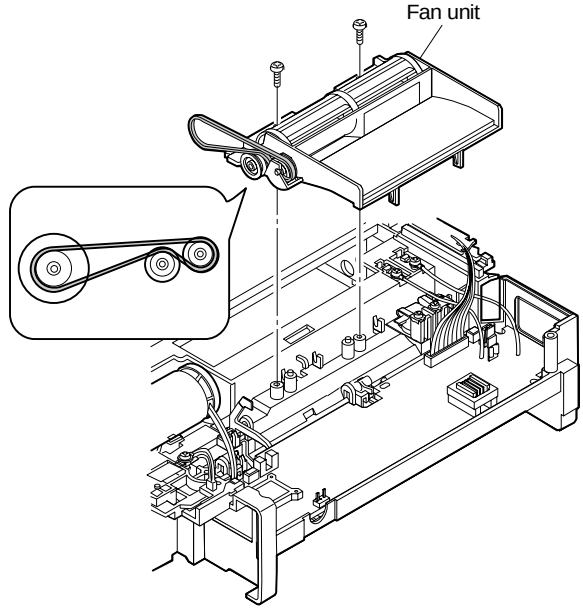
7. Main PWB removal

① Remove the document table.

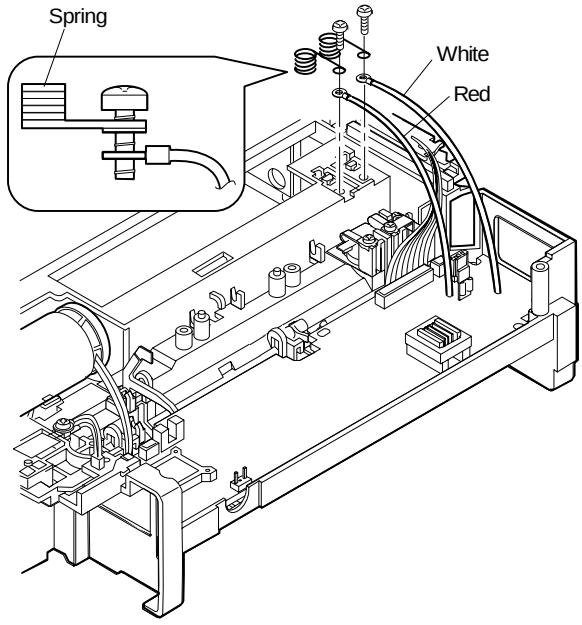
② Remove the top cabinet.

③ Remove the fan unit. (2 screws)

※ During reassembly,ensure fan belt tension is correct.



④ Remove the MC cable (red) and GRID cable (white). (1 screw for each)

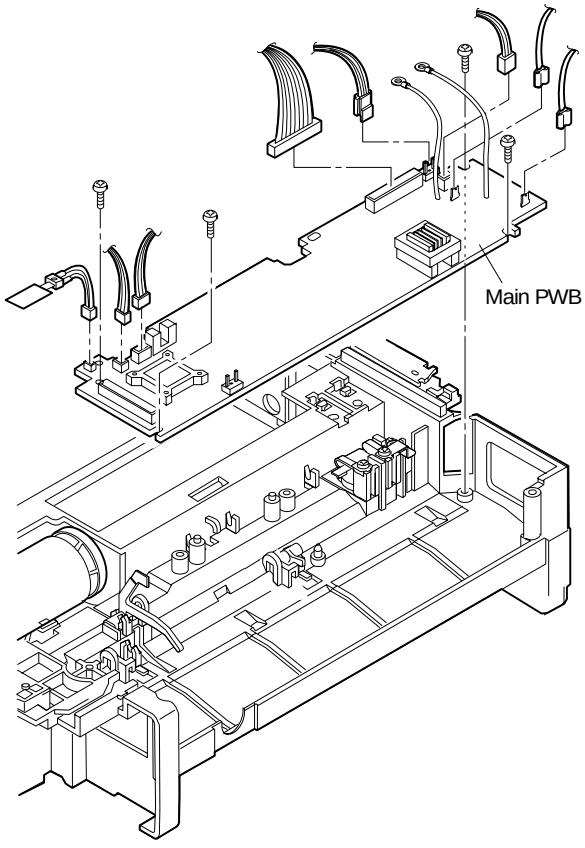


※ Note for attachment:

① Be careful not to mistake the attachment position of each cable. (Refer to the figure above.)

② The spring terminal must be on the cable terminal.

⑤ Disconnect the connector, and remove four screws and the main PWB.

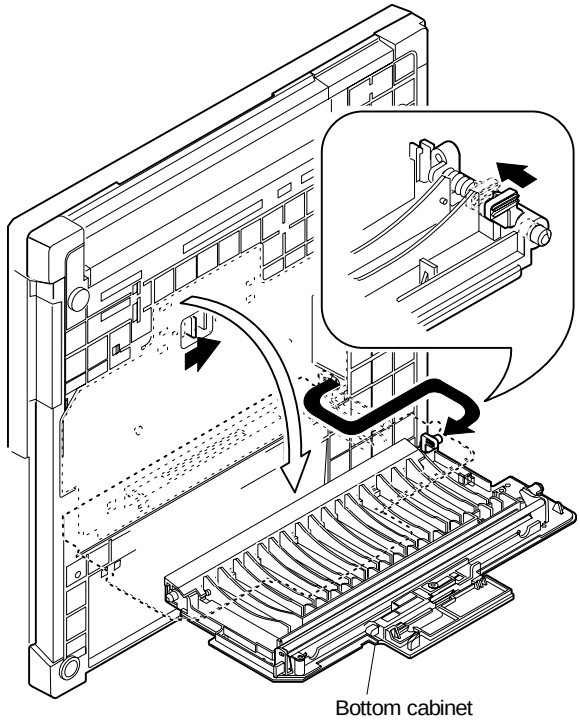


8. Drive unit disassembly

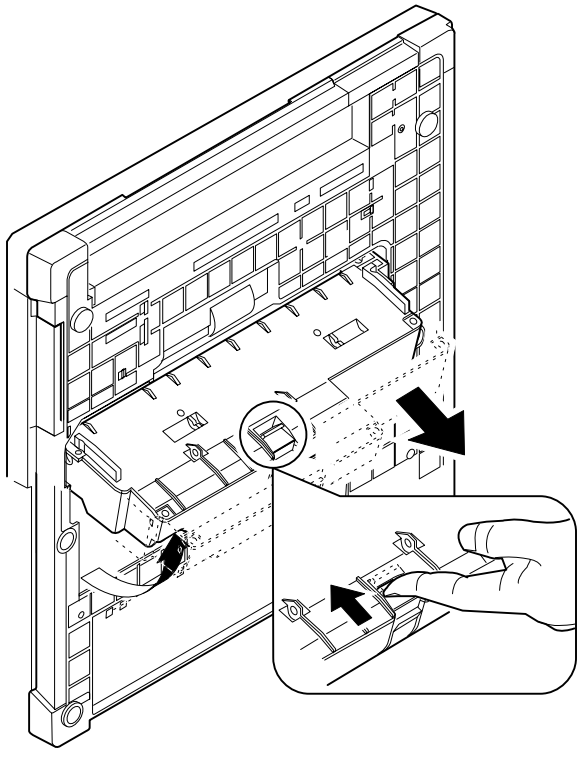
① Remove the document table.

② Remove the top cabinet.

③ Remove the bottom cabinet.

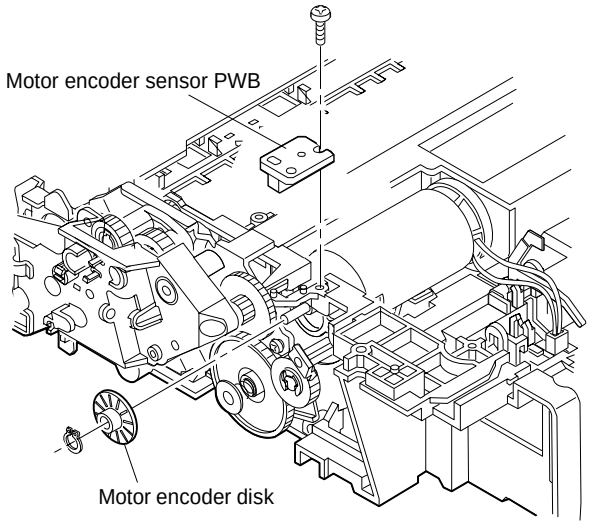


④ Remove the drum cartridge.



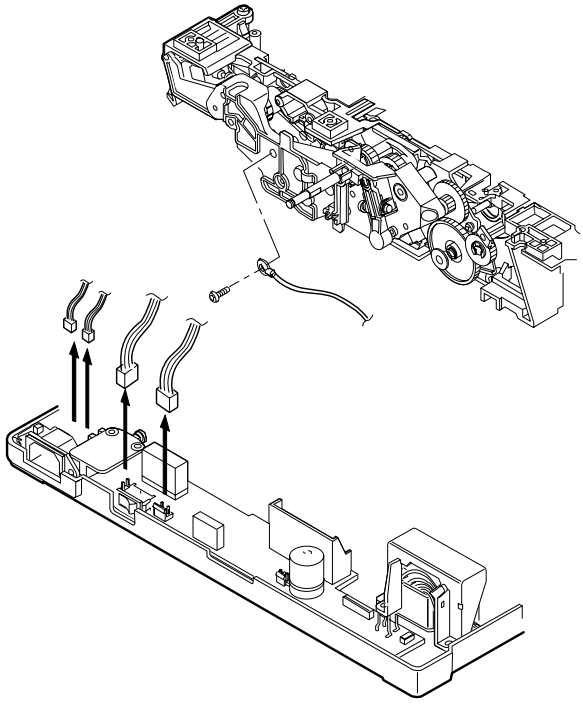
⑤ Remove the motor encoder sensor PWB. (1 screw)

⑥ Remove the motor encoder disk. (secured with C-ring)

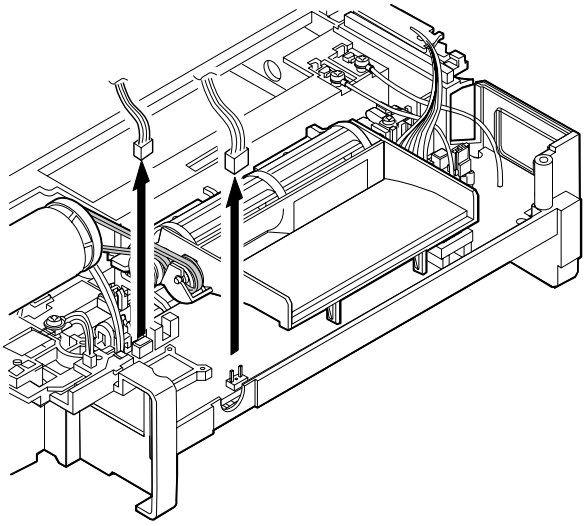


⑦ Disconnect the toner supply solenoid connector CN102, CN107, CN111, and the heater lamp connector CN106.

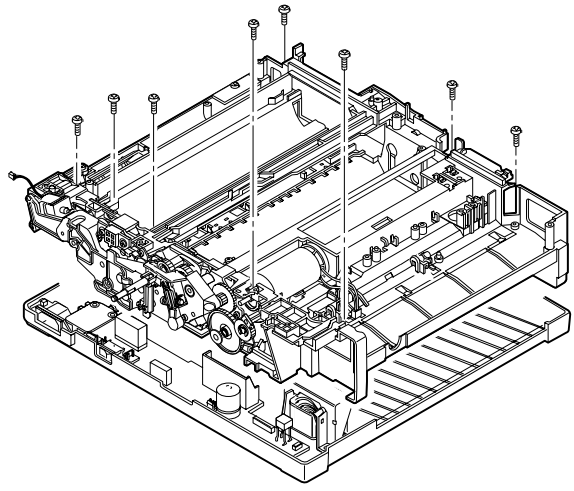
⑧ Remove the grounding cable which is fixed to the drive unit with a screw.



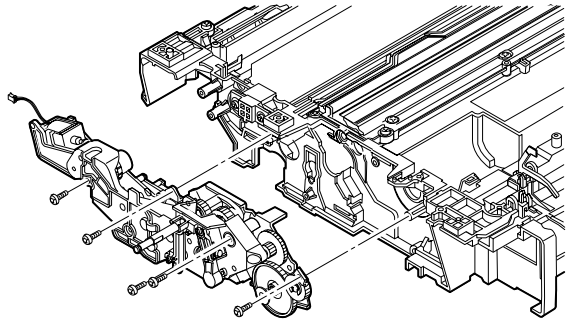
⑨ Disconnect connectors CN212 and CN210 which are connected to the main PWB.



⑩ Remove the main chassis from the bottom base. (Z-21, 7 screws; Z-26, 8 screws)



⑪ Remove the five screws which secure the drive unit and pull out the drive unit toward the rear frame and remove.



9. Drive motor disassembly

① Remove the document table.

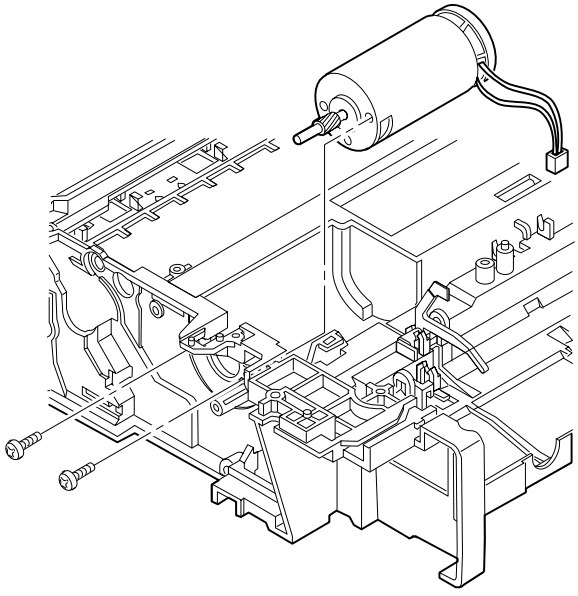
② Remove the top cabinet.

③ Remove the bottom cabinet and remove the drum cartridge.

④ Remove the motor encoder sensor PWB and the encoder.

⑤ Remove the main chassis and remove the drive unit.

⑥ Remove the drive motor. (2 screws)



10. Power PWB disassembly

① Remove the document table.

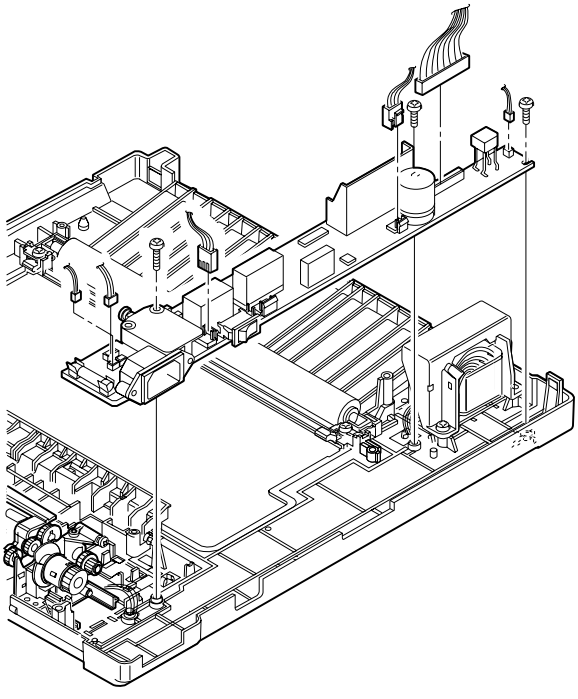
② Remove top cabinet.

③ Remove the bottom cabenit and the drum cartridge.

④ Remove the main chassis.

⑤ Disconnect the connectors and the grounding cable (1 screw).

⑥ Remove the three fixing screws and remove the power PWB.



11. Lower heat roller disassembly

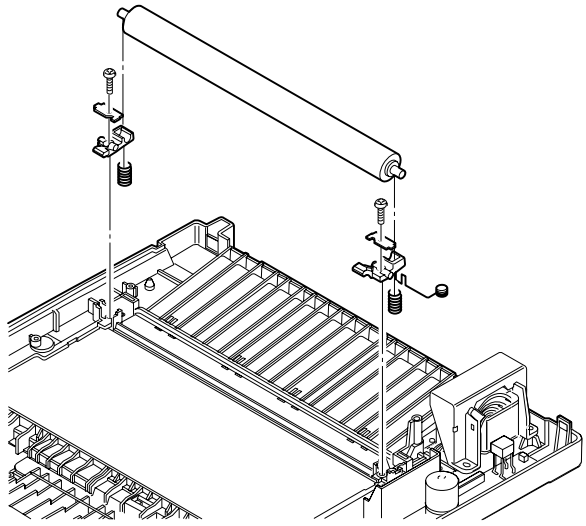
① Remove the document table.

② Remove the top cabinet.

③ Remove the bottom cabinet and the drum cartridge.

④ Remove the main chassis.

⑤ Remove the lower heat roller.

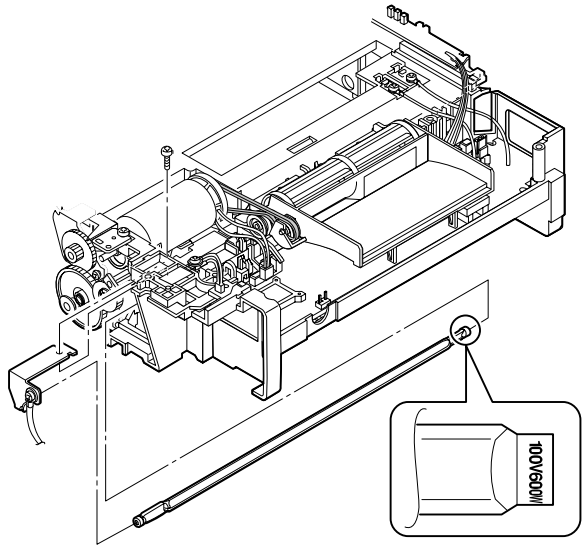


12. Heater lamp disassembly

① Remove the document table and the top cabinet.

② Remove the screw which secures the heater lamp terminal in the rear side, and remove the heater lamp terminal.

③ Pull out the heater lamp from the rear side.



Note: Do not touch the glass surface of the heater lamp directly with your hand.

※ Note for assembly: When assembling, put the rating indication (e.g., 100V 600W) of the heater lamp towards the front side.

13. Fusing separation pawl disassembly

① Remove the document table and the top cabinet.

② Remove the fan unit and the main PWB.

③ Remove the fusing separation pawls.

14. Upper heat roller disassembly

① Remove the document table and the top cabinet.

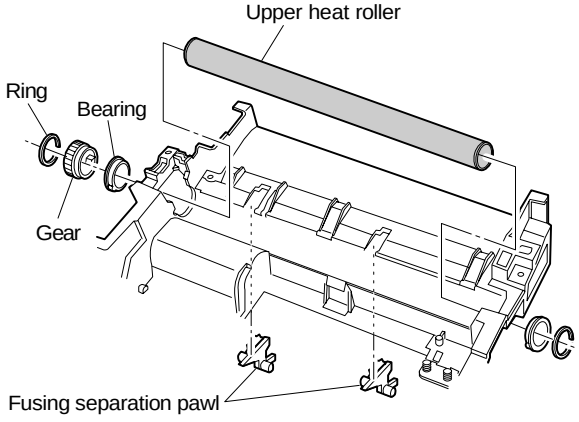
② Remove the fan unit and the main PWB.

③ Remove the fusing separation pawl.

④ Remove the heater lamp.

⑤ Remove the main chassis.

⑥ Remove the rings and gears in the both sides of the bearing, and remove the bearing.



Note: Be careful not to scratch the roller.

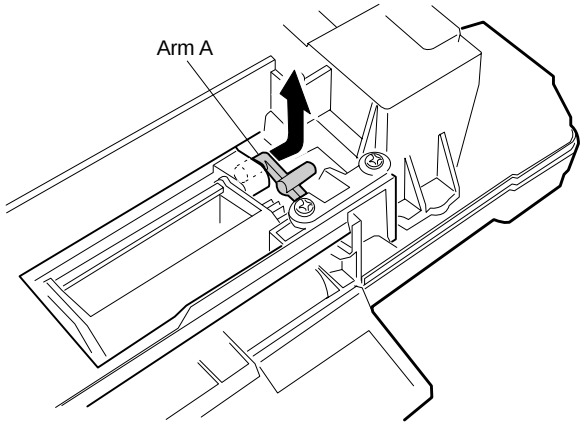
Note for assembly: Be sure to insert the ring securely in the heat roller groove.

15. Paper feed unit and resist roller removal (Z-26)

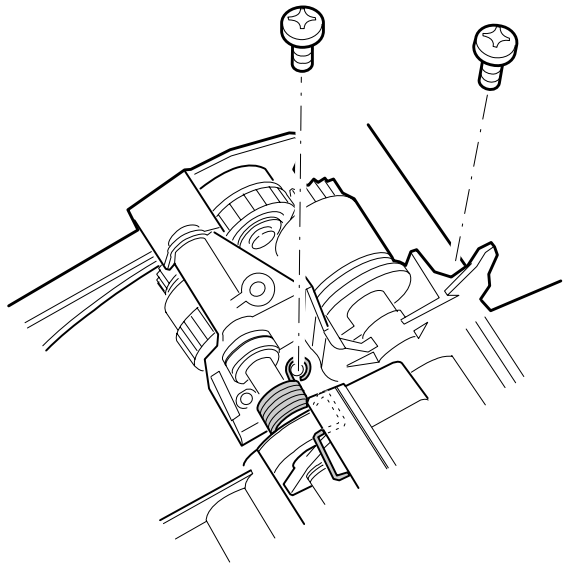
① Remove the document table and the top cabinet.

② Remove the main chassis.

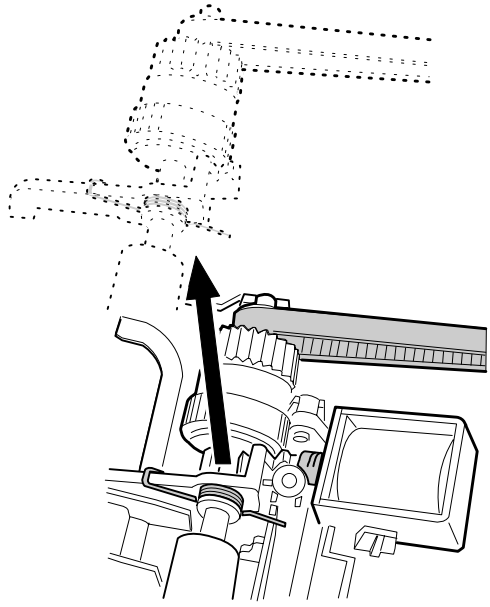
③ Remove the arm A.



④ Remove the two screws and an E-ring which are fixing the paper feed unit.



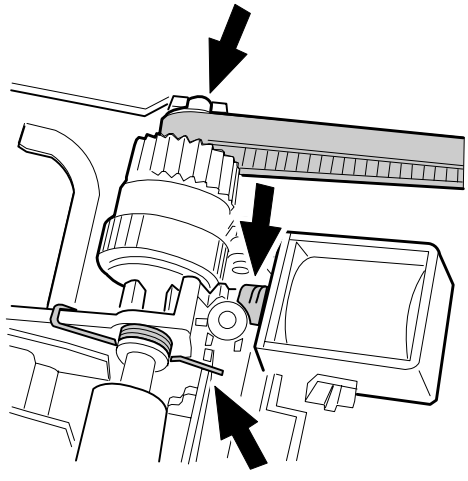
⑤ Forcibly pull the resist roller upwards to remove.



⑥ Remove the paper feed unit.

Note for assembly

- Hang the release lever spring attached to the resist roller shaft on the resist lever and put the spring end in the groove.
- Attach the drive belt securely.
- Be careful to the solenoid plunger position.



[9] SIMULATION AND SELF DIAG

1. Simulation

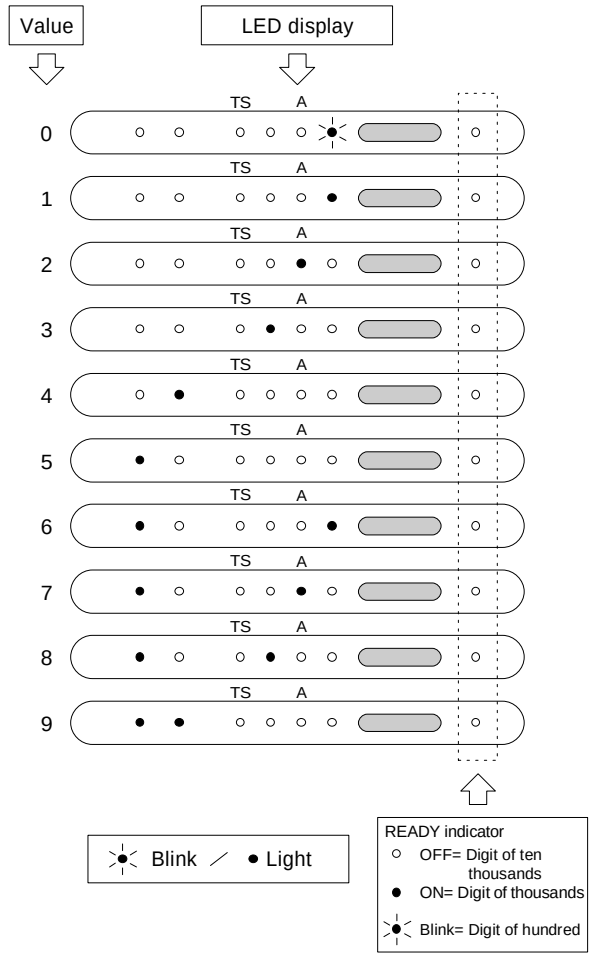
Simulation No.	Content	Use division
0※	Total counter read	Service
1※	Drum counter read	Service
2※	Total counter write	Service
3※	Drum counter write	Service
	Drum counter clear Total counter read (Z-21 only)	Service
	Lead edge image loss adjustment Copy lamp normal range brightness adjustment AE gain setting (auto) AE gain setting (manual)	Service
	Auto exposure correction	User

※ Simulations 0 ~ 3 cannot be executed in the Z-21.
By installing the operation panel of the Z-26 to the Z-21, simulations 0 ~ 3 can be executed in the Z-21.

1-1. Execution procedure

Simulation No. and function	Content
0: Total counter read	Entering the simulation mode. Short the main PWB pins (JP208-JP206), turn on the power, and "0" will be displayed. ↓ Functional description Press the PRINT key, and the total counter content is displayed on the copy quantity display from the digit of ten thousands to the digit of one in sequence. (This is repeated until the end of the simulation.) ↓ End of the simulation To terminate total counter read, press the EXPOSURE key, and the mode is changed to the standby mode for the next simulation (1, 2, or 3). To terminate the simulation, release the short of the PWB, and turn off and then on the power.
1: Drum counter read	Entering the simulation mode Short the main PWB pins (JP208-JP206), turn on the power, and "0" will be displayed. Then press the copy quantity set key to display "1." ↓ Execution of the function Press the PRINT key, and the Drum counter content is displayed on the copy quantity display from the digit of ten thousands to the digit of one in sequence. (This is repeated until the end of the simulation.) ↓ End of the simulation To terminate drum counter read, press the EXPOSURE key, and the mode is changed to the standby mode for the next simulation (2, 3, or 0). To terminate the simulation, release the short of the PWB, and turn off and then on the power.
2: Total counter write	Entering the simulation mode Short the main PWB pins (JP208-JP206), turn on the power, and "0" will be displayed. Then press the copy quantity set key to display "2." ↓ Execution of the function

Simulation No. and function	Content
	Press the PRINT key, and the misfeed indicator will light up to allow entry of the digit of ten thousands. Set a value with the copy quantity set key and press the PRINT key to establish the setting. AT the same time, the misfeed indicator goes off and the TD cartridge replacement indicator lights up. Under this state, entry in the digit of thousand is allowed. Set a value with the copy quantity set key and press the PRINT key to establish the setting. The TD cartridge replacement indicator goes off and the LIGHT exposure indicator lights up. Set the digit of hundred in the same manner. Then the LIGHT exposure indicator goes off and the auto exposure indicator lights up. Set the digit of ten in the same manner. Then the auto exposure indicator lights up and the DARK exposure indicator lights up. Set the digit of one at last. After completion of setting, the set value is automatically stored and the simulation is terminated. ↓ End of the simulation After completion of the simulation, the mode is changed to the standby mode for the next simulation (3, 0, or 1). To terminate the simulation, release the short of the PWB, and turn off and then on the power.
3. Drum counter write	Entering the simulation Short the main PWB pins (JP208-JP206), turn on the power, and "0" will be displayed. Then press the copy quantity set key to display "3." ↓ Execution of the function Press the PRINT key, and the misfeed indicator will light up to allow entry of the digit of ten thousands. Set a value with the copy quantity set key and press the PRINT key to establish the setting. AT the same time, the misfeed indicator goes off and the TD cartridge replacement indicator lights up. Under this state, entry in the digit of thousand is allowed. Set a value with the copy quantity set key and press the PRINT key to establish the setting. The TD cartridge replacement indicator goes off and the LIGHT exposure indicator lights up. Set the digit of hundred in the same manner. Then the LIGHT exposure indicator goes off and the auto exposure lamp lights up. Set the digit of ten in the same manner. Then the auto exposure indicator lights up and the DARK exposure indicator lights up. Set the ones digit. After completion of setting, the set value is automatically stored and the simulation 3 is terminated. ↓ End of the simulation After completion of the simulation, the mode is changed to the standby mode for the next simulation (0, 1, or 2). To terminate the simulation, release the short of the PWB, and turn off and then on the power.
Drum counter clear Total counter read (Z-21 only)	Entering the simulation Press and hold the EXPOSURE key and turn on the power. All the indicators except for the ready indicator light up. ↓ Execution of the function <Drum counter clear> Release the EXPOSURE key then press and hold it for 10 sec, and the drum counter will be cleared and the misfeed indicator and the TD cartridge replacement indicator will go off. After checking that the lamps have gone off, release the EXPOSURE key, and the mode is automatically changed to the ready state, allowing copy operations. <Total counter read> (Z-21 only) Release the EXPOSURE key once then press it again to display the digit of ten thousands in the total counter. then release the EXPOSURE key and press it to display the digit of thousand. Similarly, release and press the EXPOSURE key to display the digit of hundred. ※ After reading the total counter, to terminate without clearing the drum counter, turn off and on the power. When the EXPOSURE key is kept pressing for 10 sec after that, the drum counter is cleared in the same manner as the Z-26. Note: Do not clear the drum counter except when replacing the drum cartridge.

Simulation No. and function	Content
	<Display at total counter read> The display means as shown below: 
Lead edge image loss adjustment Copy lamp manual normal range brightness setting AE gain setting (Auto) AE gain setting (Manual) ※ For the actual adjustment procedure, refer to [10] ADJUSTMENTS.	Entering the simulation Short the main PWB pins (JP210-JP211), turn on the power, and the misfeed indicator will blink. Then the four adjustment and settings shown on the left. Refer to page 26. ↓ Execution of the function <Lead edge image loss adjustment> Turn the VR202 on the main PWB, so the misfeed indicator will light (from blinking to constantly on state). Under this state, the adjustments are allowed. When the VR202 is turned clockwise, the lead edge image loss becomes smaller. When the VR202 is turned counterclockwise, the lead edge image loss becomes greater. When the EXPOSURE key is pressed after completion of the setting, the set value is established and automatically stored. The misfeed indicator goes off. <Copy lamp manual normal range brightness setting> When the misfeed indicator goes off, the TD cartridge replacement indicator blinks. Press the EXPOSURE key and turn the VR202, and the misfeed indicator will light up (from blinking), allowing the adjustment. When the VR202 is turned clockwise, the brightness is increased. When the VR202 is turned counterclockwise, the brightness is decreased. After completion of the setting, before pressing the EXPOSURE key, place a white paper on the table glass and press the EXPOSURE key. The set value is established and stored, and the TD cartridge replacement indicator goes off. <AE gain setting (auto)> When the TD cartridge replacement indicator goes off, the LIGHT exposure indicator lights up. At the same time, the copy lamp lights up to set the AE (auto exposure) gain. After completion of AE (auto exposuse) gain, the copy lamp and the LIGHT exposure indicator go off and the exposure AUTO lamp blinks.

<table>
<tr><th>Simulation No. and function</th><th>Content</th></tr>
<tr><td></td><td>
<AE gain setting (manual)>
With the exposure AUTO lamp blinking, turn the VR202 to set the AE (auto exposure) gain manually.
When the VR202 is turned clockwise, brightness is increased.
When the VR202 is turned counterclockwise, brightness is decreased.
After completion of the setting, press the EXPOSURE key to establish and store the set value.
※ When the AE (auto exposure) gain is automatically set, the manual setting is cancelled and the simulation is terminated.
↓
End of the simulation
After setting the AE gain, the simulation is automatically terminated and the READY indicator is lighted.
※ Note: To return to the normal operation mode (copy operation), turn on and off the power to cancel the simulation.
</td></tr>
<tr><td>Auto exposure correction</td><td>
The brightness at auto exposure can be set in three levels to adapt for deterioration of the photoconductor, dirt in the optical system, and the user's preference. In the toner save mode, the toner consumption is saved by about 20% compared with the standard setting.
※ When this correction is performed, the manual exposure mode is also changed.

Entering the simulation
↓
Turn on the power to set the machine to the ready state or the auto power shut off state. Under this state, keep pressing the EXPOSURE key for 10 sec.
↓
Execution of the function
When the EXPOSURE key is pressed for 10 sec, the currently set auto exposure level is displayed by the exposure indicators.
Select the desired brightness with the EXPOSURE key, and leave the machine for 5 sec.
All exposure indicators go off and the machine goes into the ready state.

<table>
<tr><th>Exposure cycle</th><th>Display</th></tr>
<tr><td>1. Auto</td><td>Toner save ○ Light ○ [Auto] ● Dark ○</td></tr>
<tr><td>↓
2. Manual (Light)</td><td>Toner save ○ Light ● [Auto] ○ Dark ○</td></tr>
<tr><td>↓
3. Manual (Dark)</td><td>Toner save ○ Light ○ [Auto] ○ Dark ●</td></tr>
<tr><td>↓
4. Auto
¦ Repated</td><td>Toner save ○ Light ○ [Auto] ● Dark ○</td></tr>
</table>
</td></tr>
</table>

2. Self diag functions

When a trouble occurs in the machine, the display indicates it and the machine stops immediately.
The display section differs in the Z-21 and in the Z-26.
<List of the self dial functions>

Display		Content	Major cause
Z-21	Z-26		
All indicators except for the ready indicator blink.	L3	After the motor starts rotation, the table sensor (TPSP) signal keeps unchanged for 15 sec.	• Table sensor defect • Main PWB defect • Power PWB defect • Drive unit defect
All indicators except for the ready indicator blink.	L4	The motor rotary encoder (MRE) signal keeps unchanged for more than 50ms after turning on the power or after returning to the auto shut off state.	• Motor defect • Motor rotary sensor defect • Main PWB defect • An abnormal load is applied to the drive section to prevent the motor from rotating normally.
All indicators except for the ready indicator blink.	L8	• AE sensor output abnormality • The read value (AESP signal) of the white mylar section in the back of the table glass detected by the sensor is 0.2V or less. • Full wave signal is not inputted for more than 1.5 sec.	• AE sensor defect • Dirt on the light receiving section of the AE sensor • White strip on underside of glass is dirty. • Copy lamp disconnection (breakage) (Does not light up.) • Power PWB defect • Main PWB defect
All indicators except for the ready indicator blink.	H2	Thermistor open detection	• Thermistor breakage • Main PWB defect
All indicators except for the ready indicator blink.	H3	Abnormally high temperature of the heater roller When the fusing temperature reaches 180°C.	• Main PWB defect • Triac defect
All indicators except for the ready indicator blink.	H4	Abnormally low temperature of the heater roller • When a low temperature of 100°C is detected for more than 3 sec during copying. • The temperature does not reach 149°C within 40 sec after turning on the power or after auto shut off.	• Heater lamp disconnection (breakage) • Main PWB defect • Power PWB defect • Thermostat open

Note

- The Z-26 provides "P" display for paper feed error display, and paper empty display.
- A thermostat (which is open at 165 C) is provided to prevent against abnormally high temperature in the fusing section.

[Reference]

Since the Z-21 has no copy quantity display, the trouble codes are not displayed.
When the display PWB of the Z-26 is connected to the Z-21, however, the trouble codes can be checked similarly with the Z-26.

[10] ADJUSTMENTS

1. Lead edge image loss adjustment

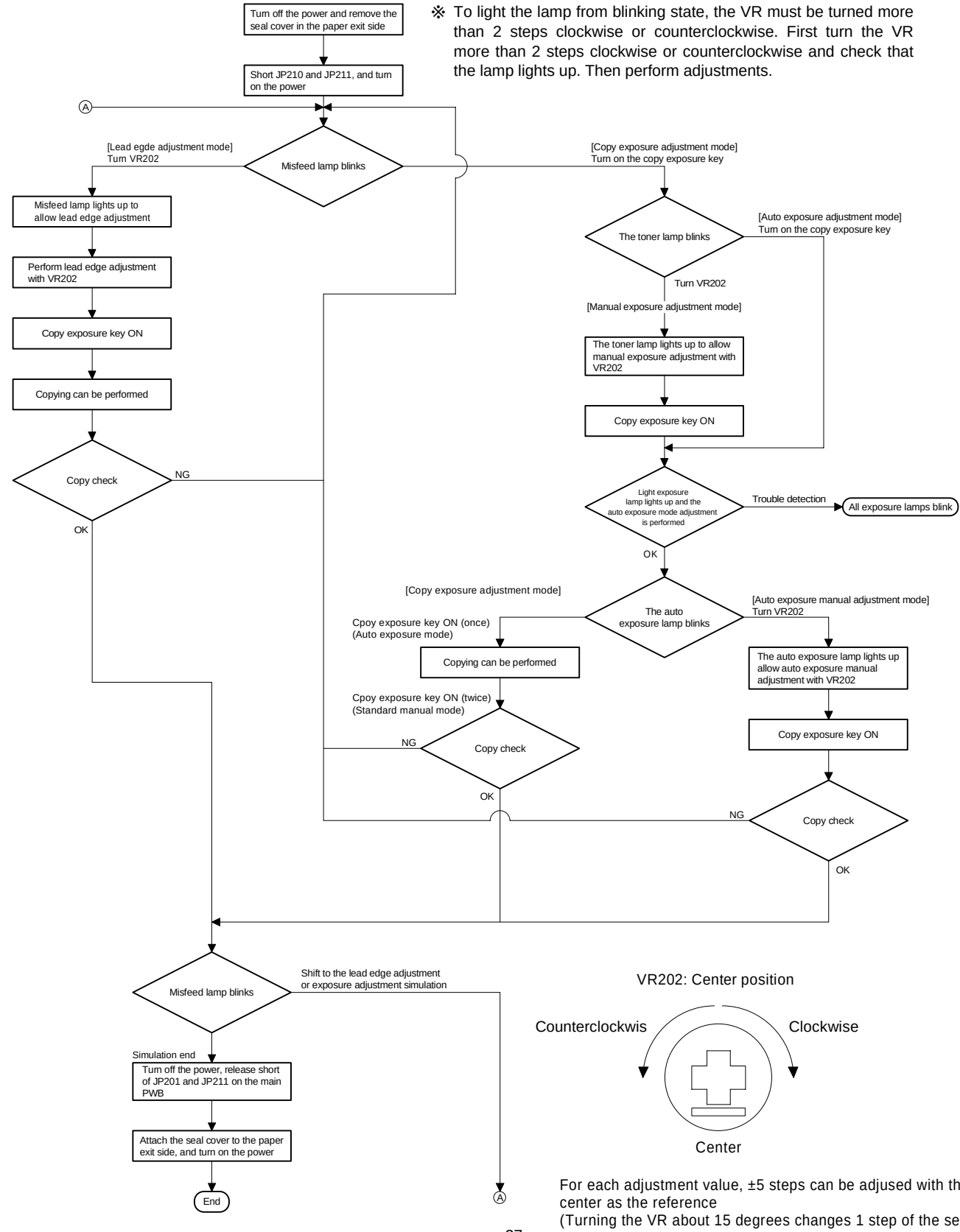
The lead edge adjustment is performed in the following cases:

- When the main PWB is replaced.
- When the EEPROM is replaced.
- When the power unit is replaced.

※ Even in the other cases, when the drive section or the paper feed section is disassembled or when some parts in those sections are replaced, check copy quality.

Use a simulation to perform the lead edge adjustment. Use the same simulation to perform the copy exposure adjustment.
The simulation procedure is as shown below:

Flow Chart of lead edge and exposure adjustment


Turn off the power and remove the seal cover in the paper exit side
Short JP210 and JP211, and turn on the power
A
Misfeed lamp blinks
[Lead egde adjustment mode]
Turn VR202
Misfeed lamp lights up to allow lead edge adjustment
Perform lead edge adjustment with VR202
Copy exposure key ON
Copying can be performed
Copy check
NG
OK
[Copy exposure adjustment mode]
Turn on the copy exposure key
The toner lamp blinks
[Auto exposure adjustment mode]
Turn on the copy exposure key
Turn VR202
[Manual exposure adjustment mode]
The toner lamp lights up to allow manual exposure adjustment with VR202
Copy exposure key ON
Light exposure lamp lights up and the auto exposure mode adjustment is performed
Trouble detection
All exposure lamps blink
OK
[Copy exposure adjustment mode]
The auto exposure lamp blinks
[Auto exposure manual adjustment mode]
Turn VR202
Cpoy exposure key ON (once)
(Auto exposure mode)
Copying can be performed
Cpoy exposure key ON (twice)
(Standard manual mode)
Copy check
NG
OK
The auto exposure lamp lights up allow auto exposure manual adjustment with VR202
Copy exposure key ON
Copy check
NG
OK
Misfeed lamp blinks
Shift to the lead edge adjustment or exposure adjustment simulation
Simulation end
Turn off the power, release short of JP201 and JP211 on the main PWB
Attach the seal cover to the paper exit side, and turn on the power
End
A

※ To light the lamp from blinking state, the VR must be turned more than 2 steps clockwise or counterclockwise. First turn the VR more than 2 steps clockwise or counterclockwise and check that the lamp lights up. Then perform adjustments.

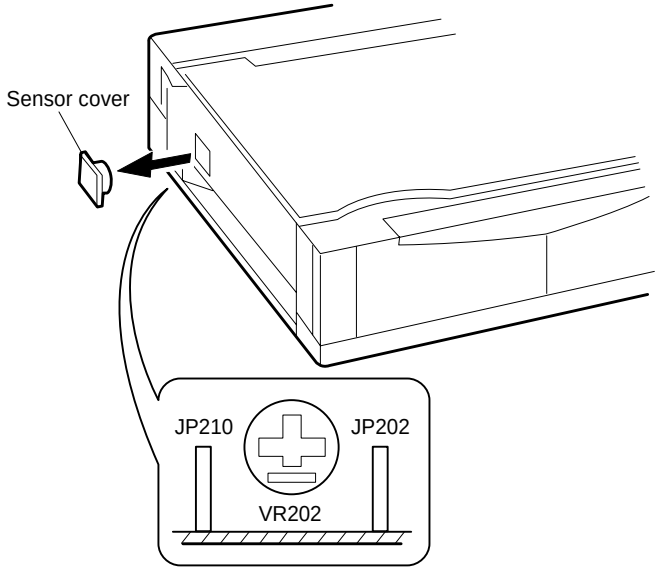
For each adjustment value, ±5 steps can be adjused with the center as the reference
(Turning the VR about 15 degrees changes 1 step of the set value.)

<<Lead edge image loss adjustment procedure>>

① Place a scale on the center of the document table and attach it with adhesive tape.

② Turn off the power and remove the sensor cover in the paper exit side.

③ Short JP-210 and JP211 on the main PWB, and turn on the power.

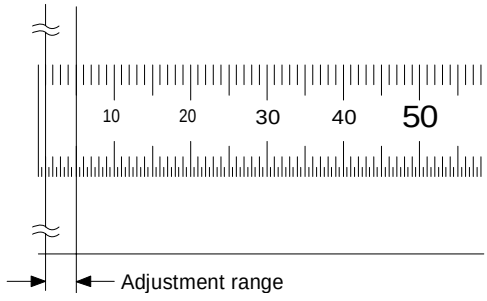


④ When the misfeed indicator blinks, turn VR202 more than 2 steps so the misfeed indicator stays on constantly, and perform the adjustment.

⑤ Press the copy exposure key.

⑥ Make a copy.

⑦ Check the copy to be in the specified range (1 ~ 5mm).



When the adjustment value is outside the specified range, repeat the procedure from (4).

2. Exposure adjustment

The exposure adjustment is required in the following cases:

- When replacing the drum unit.
- When replacing the main PWB.
- When replacing the EEPROM.
- When replacing the copy lamp PWB.
- When replacing the AE sensor.

※ When performing the exposure adjustment, set the auto exposure correction mode to the standard mode. For the procedure, refer to [2] OPERATION PANEL AND DISPLAY FUNCTIONS, 3. Display section.

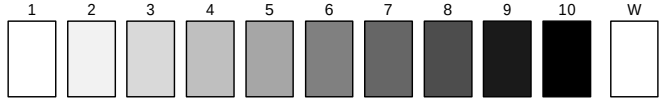
※ When performing the exposure adjustment, clean the AE sensor light receiving section and the reflector.

The simulation for the exposure adjustment is the same simulation for the lead edge adjustment. Refer to the flowchart of the lead edge adjustment.

<<Adjustment procedure>>

① Set the test chart on the document table.

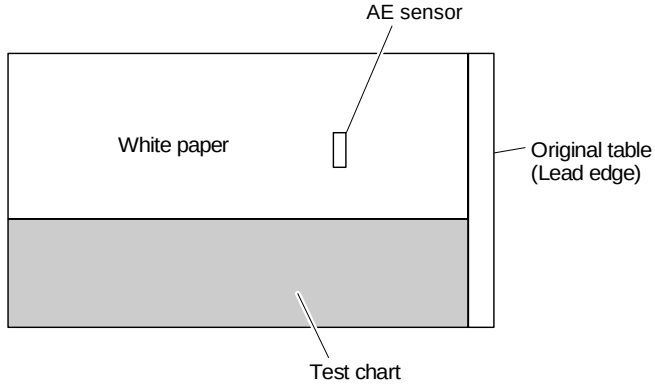
- Fold an A4 paper into two, and set two folded A4 papers on the AE sensor section. Place the UKOG-0162FCZZ on the copy section.



UKOG-0162FCZZ

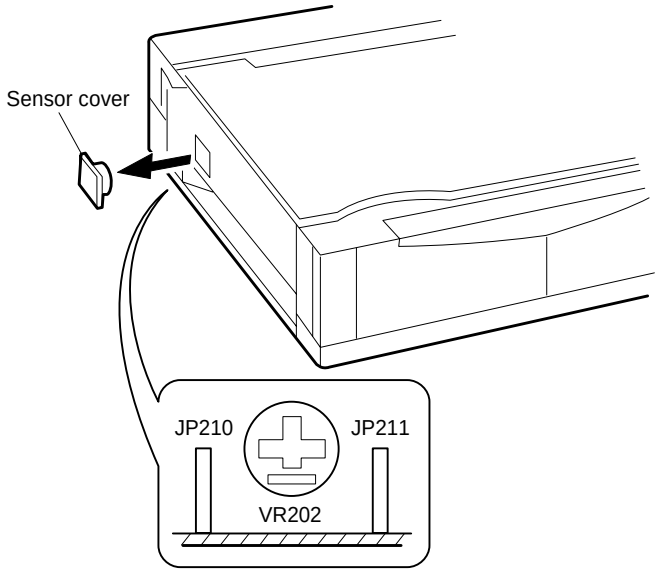
Test chart comparison table

UKOG-0162FCZZ DENSITY No.	1	2	3	4	5	6	7	8	9	10	W
UKOG-0089CSZZ DENSITY No.	0.1		0.2		0.3			0.5	1.9	0	
KODA GRAY SCALE		1		2		3		4		19	A



② Turn off the power and remove the seal cover in the paper exit side.

③ Short the main PWB pins JP210 and JP211, and turn on the power.



④ When the misfeed indicator blinks, turn on the copy exposure key.

⑤ When the toner indicator blinks, turn the VR202 more than 2 steps in either direction to light the toner indicator. Then turn the VR202 again to adjust.

⑥ Turn on the copy exposure key.

⑦ The LIGHT lamp lights up and the auto exposure mode adjustment is performed automatically.

⑧ After completion of the adjustment, the auto exposure lamp blinks.

⑨ Turn on the copy exposure key twice to make a copy. (Exposure display: Standard)

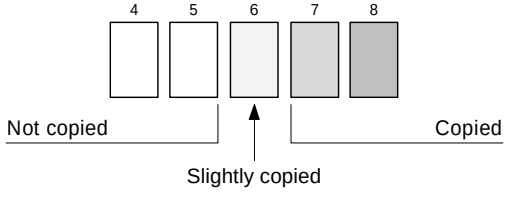
- If the copy exposure is proper, check the auto exposure level. → Go to step ⑩.
- If the copy exposure is not proper, repeat procedures from step ④.

<<Standards>>

Check that "6" of the UKOG-0162FCZZ is slightly copied.

(When too light): Turn the VR202 counterclockwise.

(When too dark): Turn the VR202 clockwise.



⑩ Check that the misfeed indicator blinks, and turn on the copy exposure key.

⑪ Check that the toner indicator blinks, and turn on the copy exposure key again.

⑫ The copy lamp lights up and the auto exposure lamp blinks.

⑬ Turn on the copy exposure key once to set to the auto adjustment mode, and make a copy.

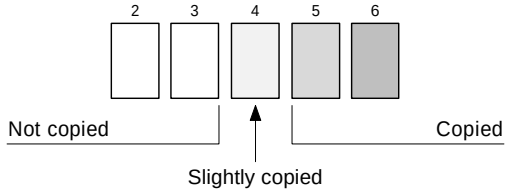
- If the copy exposure is proper, the adjustment is completed.
- If the copy exposure is not proper, go to step (4) again.

<<Standards>>

Check that "4" of the UKOG-0162FCZZ is slightly copied.

<When too light>: Turn the VR202 counterclockwise.

<When too dark>: Turn the VR202 clockwise.



⑭ Perform procedures of step (10) to step (12).

⑮ Check that the auto exposure lamp blinks, and turn the VR202 more than 2 steps clockwise or counterclockwise to light up the auto exposure lamp.

⑯ Perform the auto exposure adjustment.

⑰ Turn on the copy exposure key once to set to the auto mode, and make a copy.

- If the copy exposure is proper, the adjustment is completed.
- If the copy exposure is not proper, repeat procedures from step ⑭.

[11] Drum cartridge replacement

The drum cartridge should be replaced by a service engineer, and should not be replaced by the user.

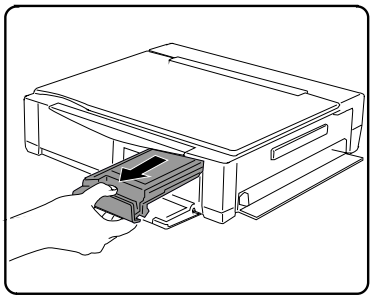
1. Drum cartridge replacement timing

The useful life of the drum cartridge is approximately 10,000 copies. When the internal counter reaches 9,700 copies and the power switch is turned on, all three exposure indicators will start to blink. This is an indication that a replacement of the drum cartridge will be needed soon. Copying can be performed using the normal procedure during this time. After approximately 300 copies have been made, the READY indicator will go off, all three exposure indicators will blink continuously, and the copier will stop operating. Replace the drum cartridge at this time.

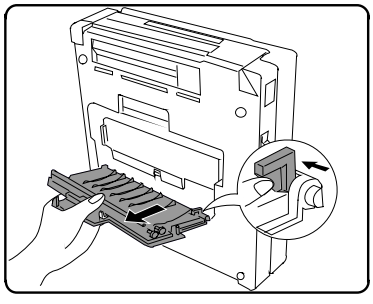
2. Drum cartridge replacement procedure

2-1. Drum cartridge replacement

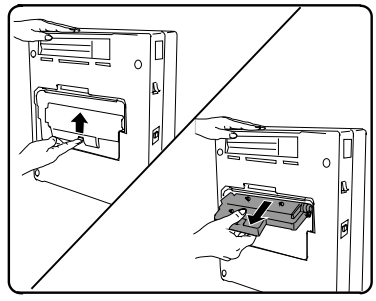
1. Turn the power switch off.
2. Open the front cover and pull out the TD cartridge.
3. Fold up the exit tray and remove the paper tray.
4. Lift the copier by the handle and stand it up with the exit area on the bottom.



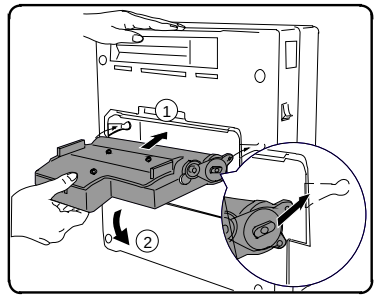
5. Push the tab on the bottom cover towards the rear side of the copier to open it.
6. Push the bottom cover release lever to the left to remove the bottom cover.



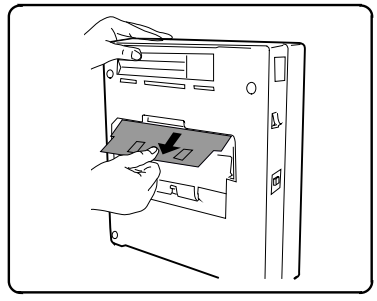
7. Push the drum cartridge release lever up, rotate the cartridge upwards and pull it out from the copier.



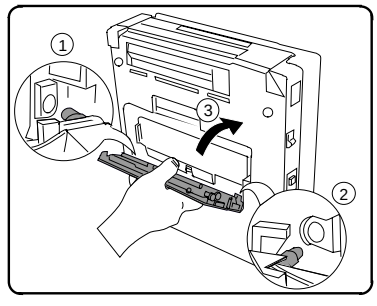
8. Insert the top of the new drum cartridge along the grooves on both sides.
9. Rotate the drum cartridge downwards until it clicks and locks in place.



10. Remove the black sheet cover from the drum cartridge.



11. Replace the bottom cover by first placing the tab at the lower left into the hole in the copier as shown, then inserting the right side at an angle.
12. Close and securely lock the bottom cover.
13. Set the copier back down as usual.
14. Slide the TD cartridge in until it locks in place and close the front cover.



2-2. Counter clear

1. Turn the power switch on while pressing the EXPOSURE key at the same time.

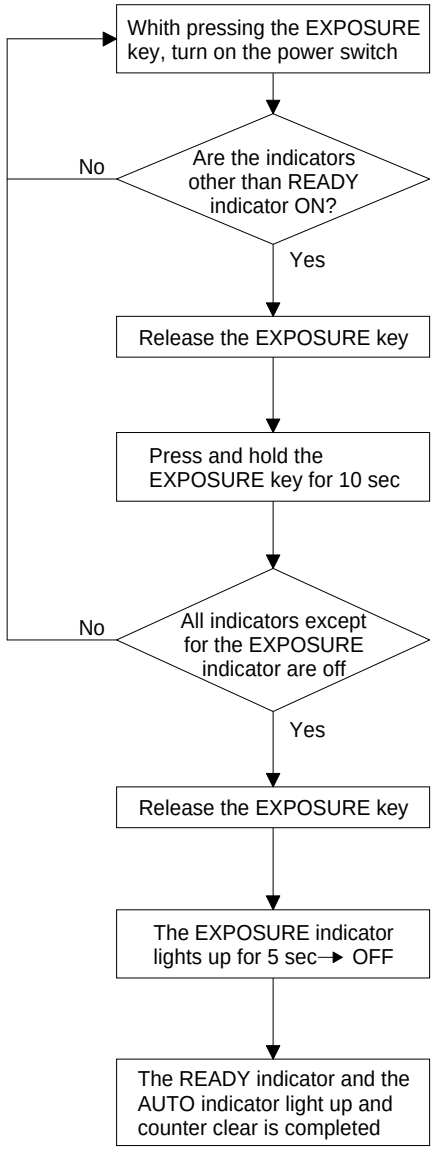
   All indicators except the READY indicator will light up. At this time release the EXPOSURE key.

2. Press and hold the EXPOSURE key for approximately 10 seconds until the three exposure indicators light up simultaneously.

   At this time release the EXPOSURE key.

- The exposure indicators will light up for approximately 5 seconds. Then, the READY indicator will light up and all the exposure indicators except (**A**) will go out. The copier is now ready for operation.
- If the three exposure indicators do not light up while pressing and holding the EXPOSURE key for more than 10 seconds, turn the power switch off and then perform steps 1 and 2 again.

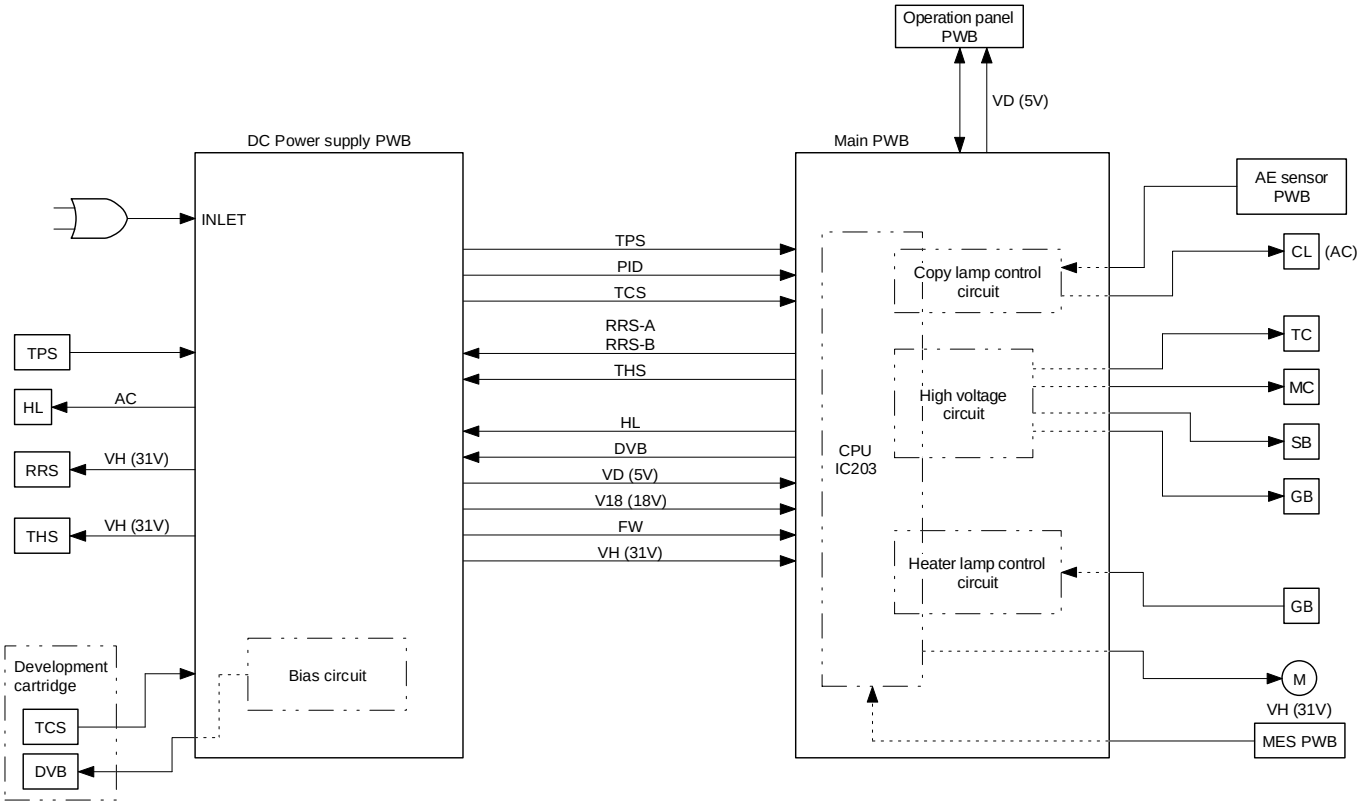
Flow of drum counter clear


Whith pressing the EXPOSURE key, turn on the power switch
Are the indicators other than READY indicator ON?
No
Yes
Release the EXPOSURE key
Press and hold the EXPOSURE key for 10 sec
All indicators except for the EXPOSURE indicator are off
No
Yes
Release the EXPOSURE key
The EXPOSURE indicator lights up for 5 sec→ OFF
The READY indicator and the AUTO indicator light up and counter clear is completed

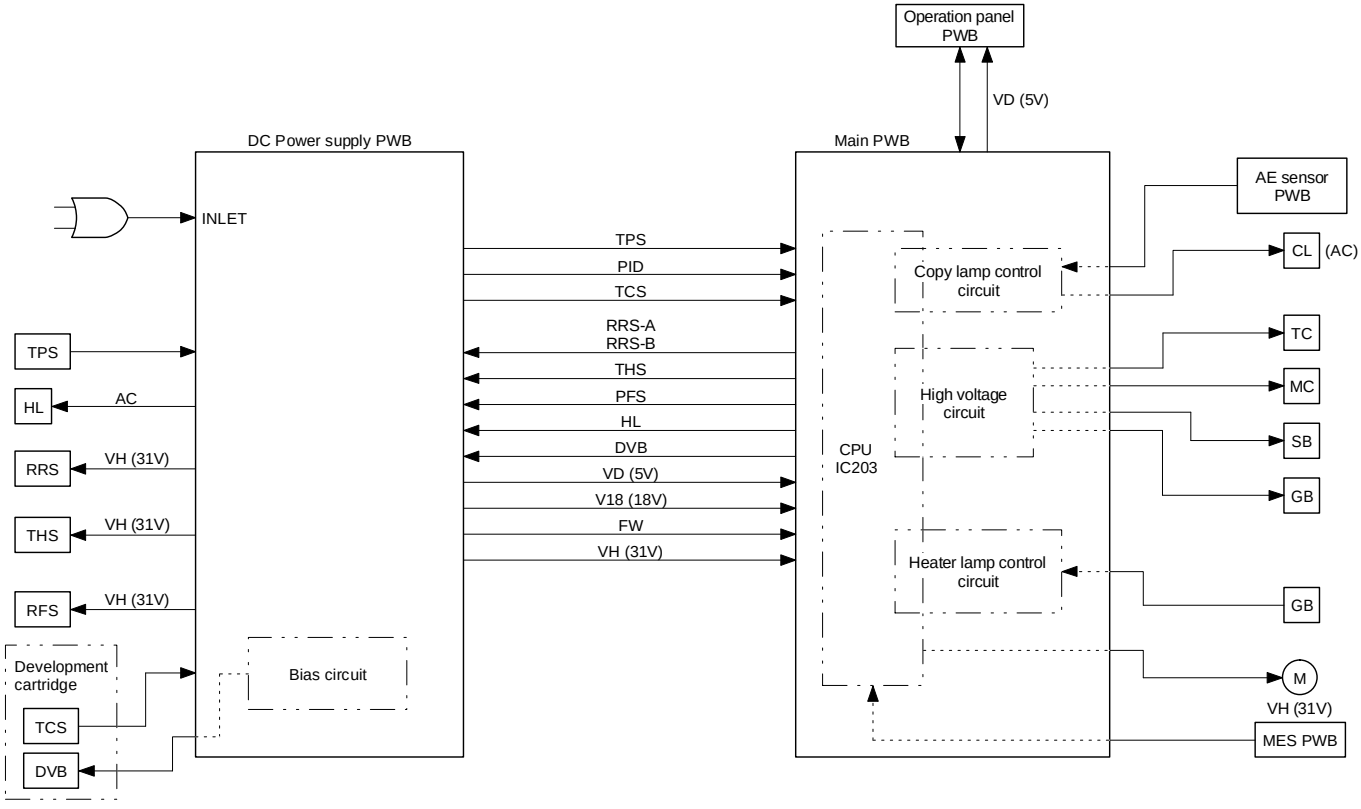
[12] CIRCUIT DIAGRAM

1. BLOCK DIAGRAM

Z-21



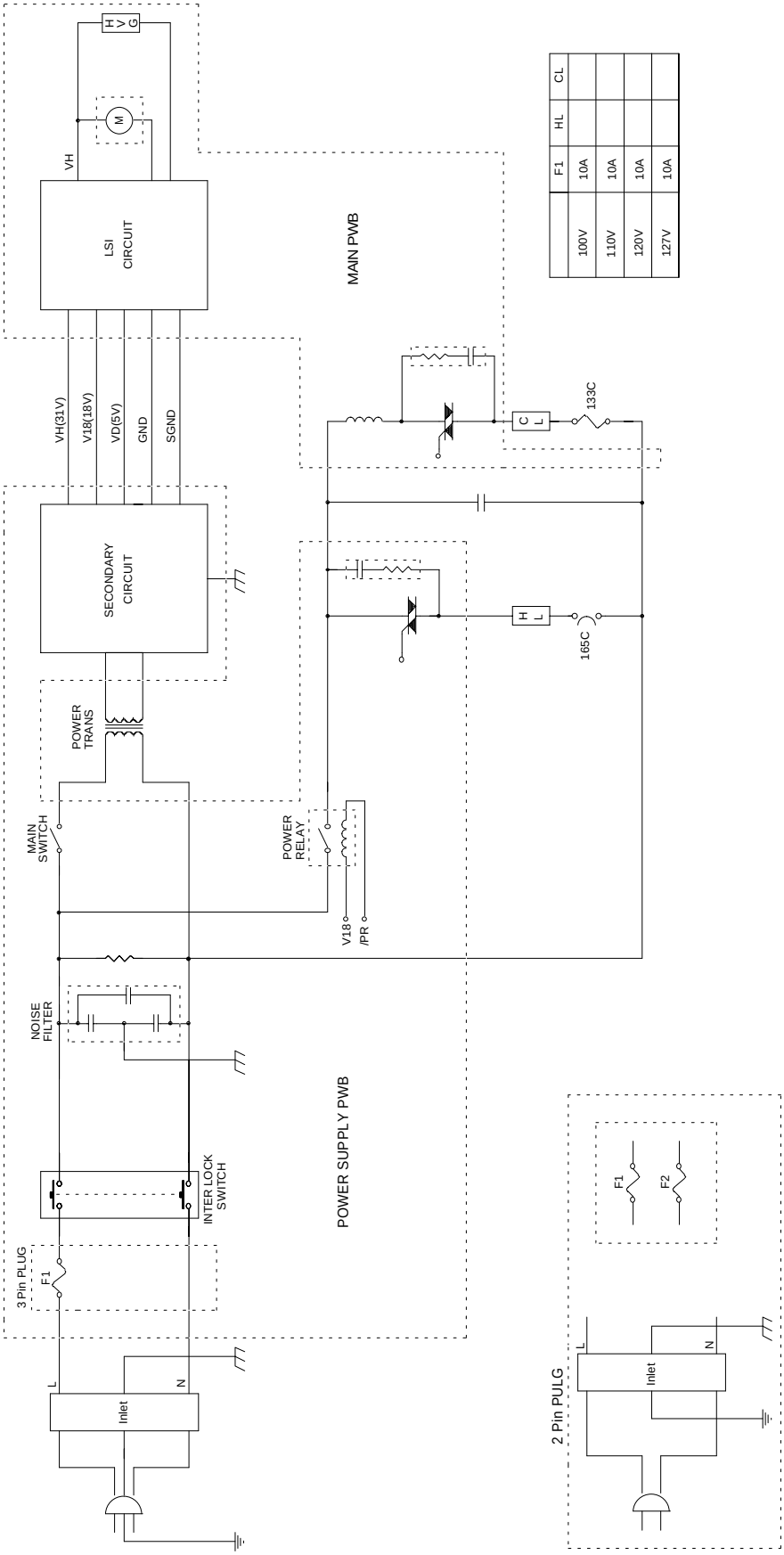
Z-26



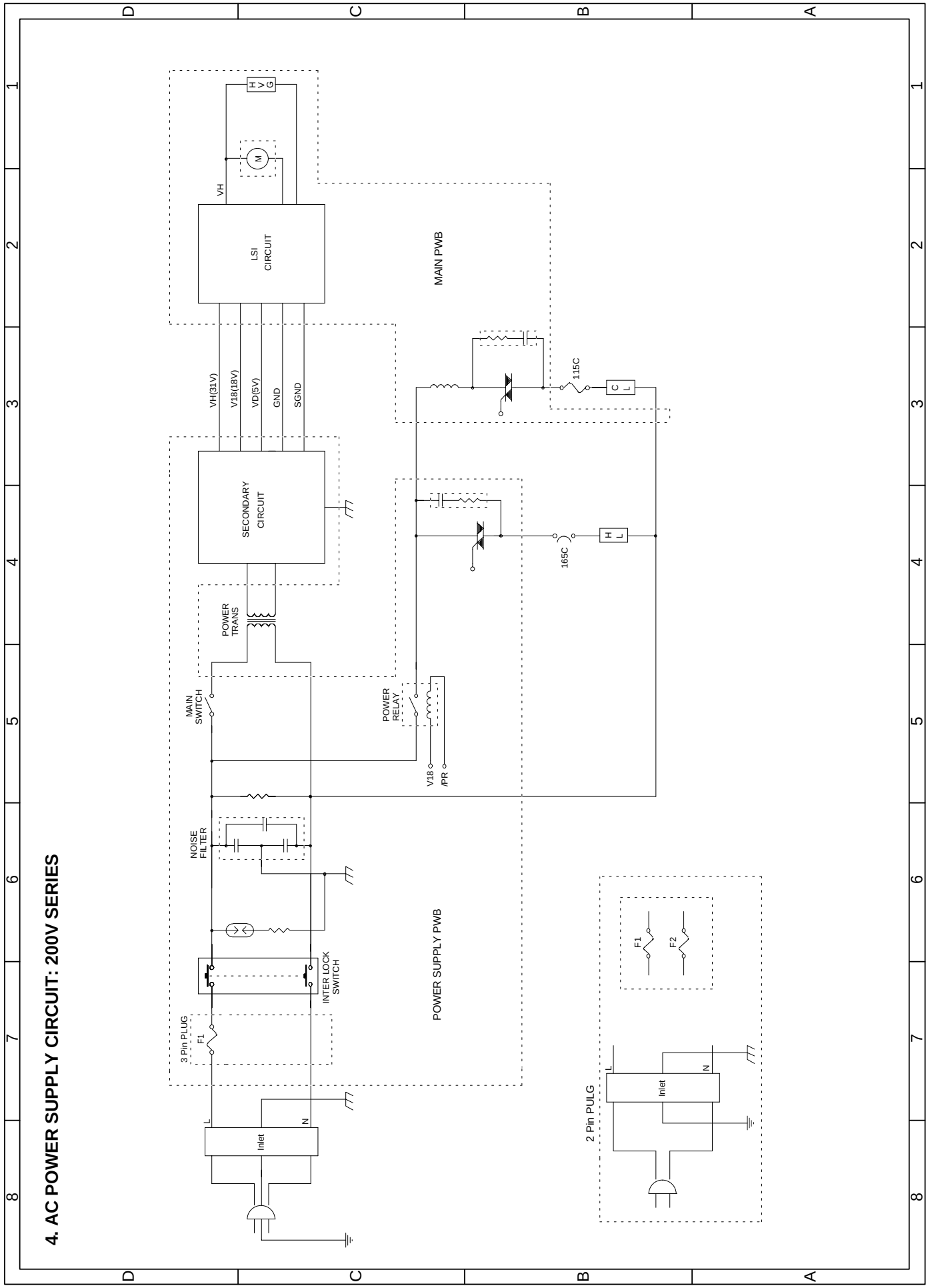
2. NAIN PWB CPU (IC203) SIGNAL NAME

PIN No.	Port	Signal name	IN/OUT	Active level	Specifications
1	P50/TXD	SDA (EEPROM)	OUT/IN	—	EEPROM data signal line
2	P51/RXD	NC	OUT	—	
3	P52/SCK	SCL (EEPROM)	OUT	—	EEPROM clock signal line
4	/RES	RESET	IN	L	Reset state at LOW (OV).
5	/NMI	/NM1	/IN	L	Driven LOW when the CPU is hung up,and interruption occurs.
6	VCC	VD	IN	—	Power (5V)
7	/STBY	VD	IN	H	Hardware standby mode signal (not used).
8	VSS	GND	IN	—	Power (GND)
9	XTAL	XTAL	IN	—	Clock (10MHz)
10	EXTAL	XTAL	IN	—	Clock (10MHz)
11	MD1	VD	IN	H	Operation mode, control signal
12	MD0	VD	IN	H	Operation mode, control signal
13	AVSS	GND	IN	—	Power (GND)
14	P70/AN0	HLTH	IN	—	Analog signal (thermistor)
15	P71/AN1	AESP	IN	—	Analog signal (AE sensor)
16	P72/AN2	VRV	IN	—	Analog signal (Volume voltage simulation)
17	P73/AN3	GND	IN	—	Analog signal (not used)
18	P74/AN4	GND	IN	—	Analog signal (not used)
19	P75/AN5	GND	IN	—	Analog signal (not used)
20	P76/AN6	GND	IN	—	Analog signal (not used)
21	P77/AN7	GND	IN	—	Analog signal (not used)
22	AVCC	VD	IN	—	A/D convertor power pin (5V)
23	P60/FTCI/TMCIO	HL	OUT	H	Heater lamp control signal
24	P61/FT0A	CSEG 0	OUT	H	Display (common 0) control signal
25	P62/FTIA	MREP	IN	Falling edge	Motor encoder signal
26	P63/FTIB/TMRIO	CSEG 1	OUT	H	Display (common 1) control signal
27	P64/FTIC/TM00	MMCLK	OUT	H	Motor control signal (PWM)
28	P65/FTID/WDCLK	WDCLK	OUT	—	Watch dog timer pulse signal
29	P66/FTOB/TMRI1	NC	OUT	—	
30	P67/TM01	CLCLK	OUT	H	Copy lamp control signal (PWM)
31	VCC	VD	IN	—	Power (5V)
32	P27/A15	RRS B	OUT	H	Paper start solenoid control signal
33	P26/A14	RRS A	OUT	H	Paper start solenoid control signal
34	P25/A13	PR	OUT	H	Power relay control signal
35	P24/A12	THS	OUT	H	Toner supply solenoid control signal
36	P23/A11	PFS	OUT	H	Paper feed solenoid control signal
37	P22/A10	/MHV	OUT	L	High voltage control signal
38	P21/A9	GBC	OUT	H	Grid control signal
39	P20/A8	DVB	OUT	H	Developing bias control signal
40	VSS	GND	IN	—	Power (GND)
41	P17/A7	NC	OUT	—	
42	P16/A6	DSEG6 (DISPLAY)	OUT	H	Display (segnent 6) control signal
43	P15/A5	DSEG5 (DISPLAY)	OUT	H	Display (segnent 5) control signal
44	P14/A4	DSEG4 (DISPLAY)	OUT	H	Display (segnent 4) control signal
45	P13/A3	DSEG3 (DISPLAY)	OUT	H	Display (segnent 3) control signal
46	P12/A2	DSEG2 (DISPLAY)	OUT	H	Display (segnent 2) control signal
47	P11/A1	DSEG1 (DISPLAY)	OUT	H	Display (segnent 1) control signal
48	P10/A0	DSEG0 (DISPLAY)	OUT	H	Display (segnent 0) control signal
49	P30/D0	PID (PAPER IN)	IN	L	Paper entry detection (L: paper presence)
50	P31/D1	POD (PAPER OUT)	IN	L	Paper exit detection (L: paper presence)
51	P32/D2	TCSP (TONER CONTROL)	IN	L	Toner density detection (L: under toner)
52	P33/D3	TCSP (TABLE POSITION)	IN	—	Tadle position detection (H: feed side)
53	P34/D4	KI (KEY INPUT)	IN	H	Key input signal
54	P35/D5	SMIP0	IN	—	Machine mode select signal (input)
55	P36/D6	SMIP1	IN	—	Machine mode select signal (input)
56	P37/D7	SMIP2	IN	—	Machine mode select signal (input)
57	P40//ADTRG//IRQ2	FW	IN	—	Zero cross signal
58	P41//IRQ1	FW	IN	—	Zero cross signal
59	P42//TRQ0	MREP	IN	—	Motor encoder signal
60	P43//RD	SMOP0	OUT	—	Machine mode strobe signal (Output)
61	P44//WR	SMOP1	OUT	—	Machine mode strobe signal (Output)
62	P45//AS	SMOP2	OUT	—	Machine mode strobe signal (Output)
63	P46/@	MSIM	IN	—	Machine emulation signal (Input)
64	P47//WAIT	NC	OUT	—	

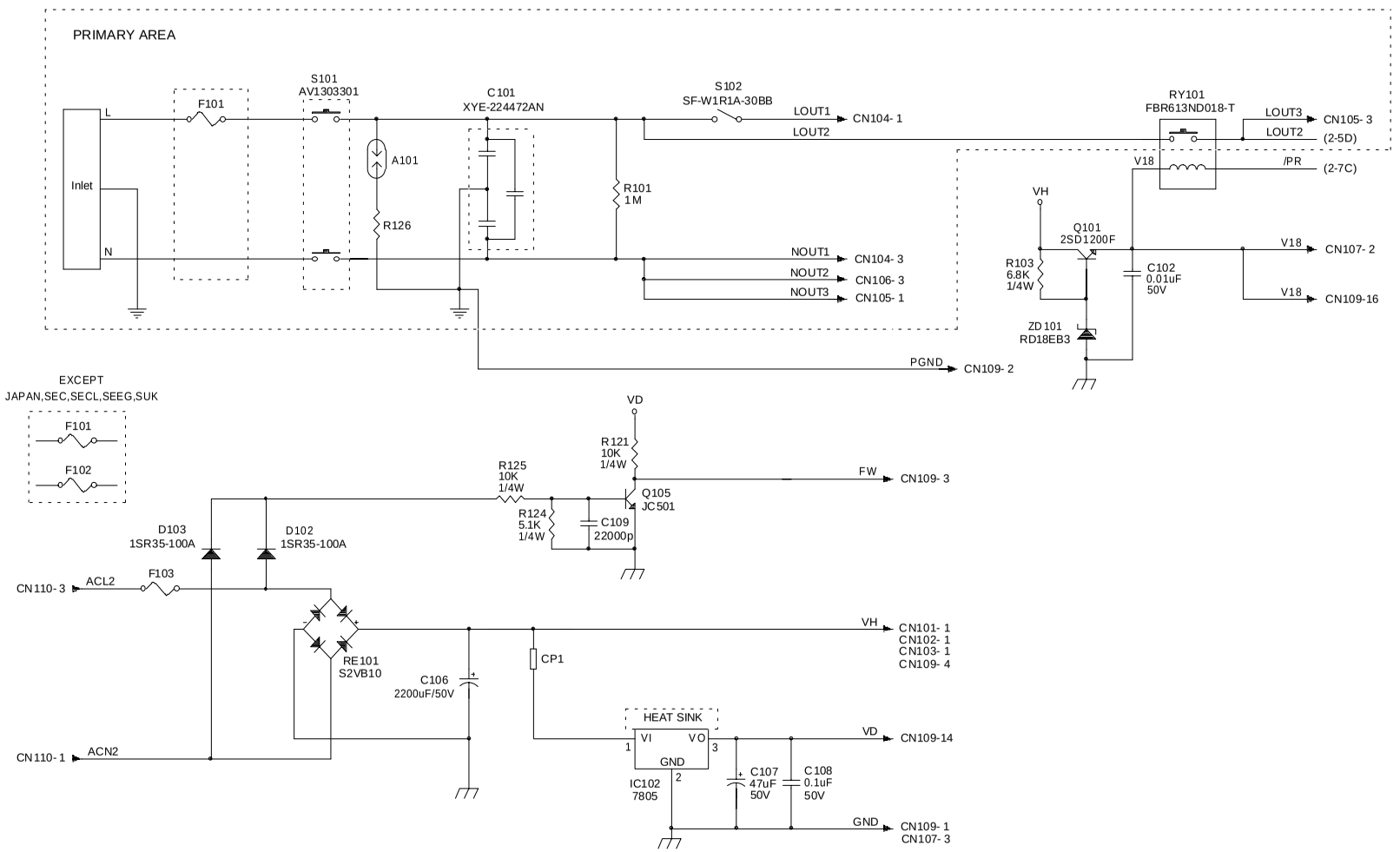
3. AC POWER SUPPLY CIRCUIT: 100V SERIES



4. AC POWER SUPPLY CIRCUIT: 200V SERIES

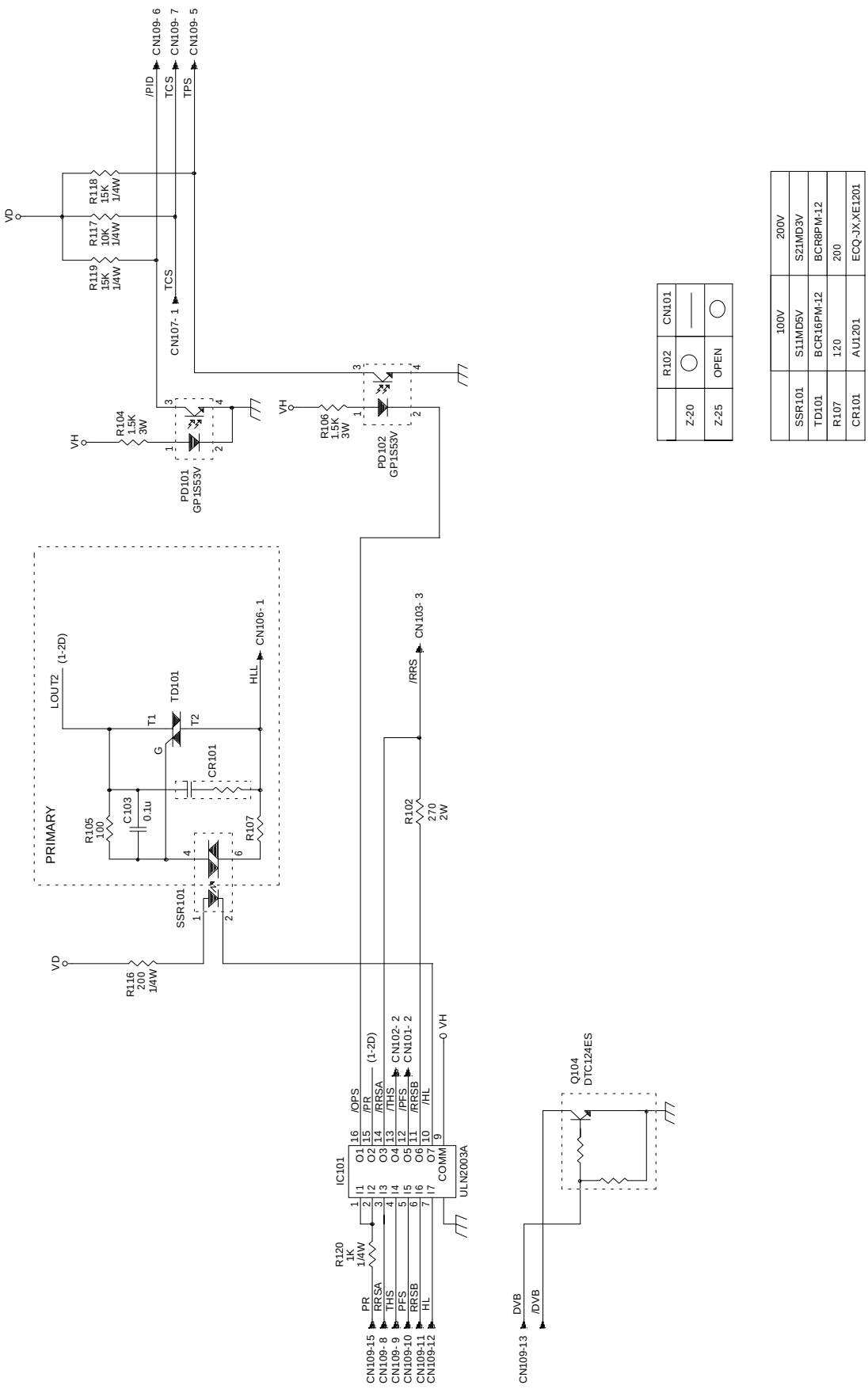


5. POWER SUPPLY P.W.B CIRCUIT-1/2 (COMMON SECTION)



	F101	F102	F103	R101	A101	R126
100V ~ 127V	125V / 10A (250V)	125V / 10A (250V)	125V /2.0A	1M / 1/4W	DSA242M	RGBS5 3
220V ~ 240V	250V / 6.3A	250V / 6.3A	250V /2.0A	1M / 1/2W	———	———

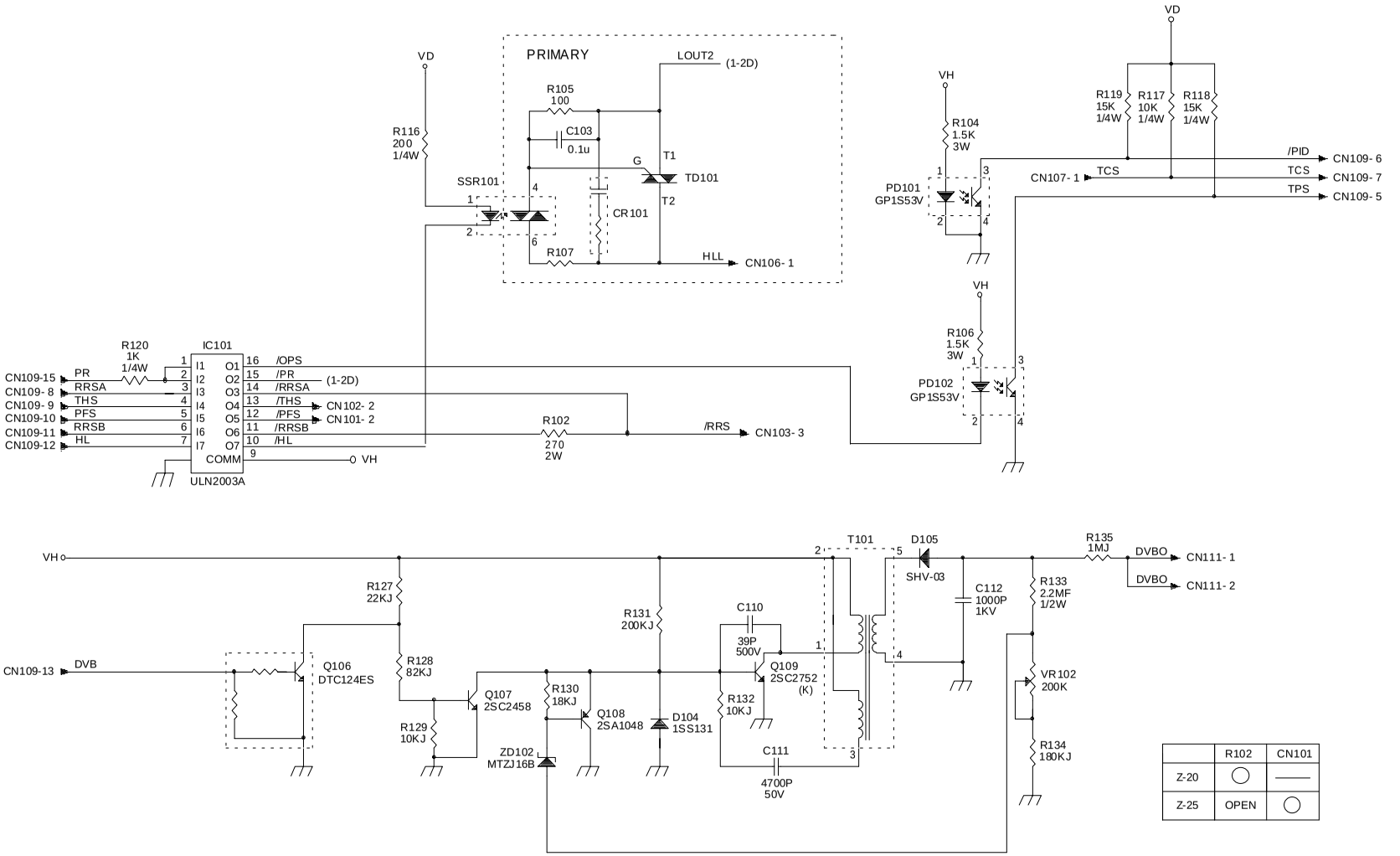
6. POWER SUPPLY P.W.B CIRCUIT-2/2 (For unit CPWBF1018FC51 only)



	R102	CN101
Z-20	○	—
Z-25	OPEN	○

	100V	200V
SSR101	S11MD5V	S21MD3V
TD101	BCR16PM-12	BCR8PM-12
R107	120	200
CR101	AU1201	ECQ-JX,XE1201

7. POWER SUPPLY CIRCUIT-2/2 (For power unit CPWBF1018FC55, 56 only)



	R102	CN101
Z-20	○	——
Z-25	OPEN	○

	100V	200V
SSR101	S11MD5V	S21MD3V
TD101	BCR16PM-12	BCR8PM-12
R107	120	200
CR101	AU1201	ECQ-JX,XE1201

8. POWER SUPPLY PWB: 100V SERIES (JAPAN AND EX. 3PIN PLUG)

- For power unit CPWBF1018FC55, 56 only

9. POWER SUPPLY PWB: 100V SERIES (EX. 2PIN PLUG): For power unit CPWBF1042FC∗∗ only

[Destination:Colombia, Dominica, Equador, Indonesia]

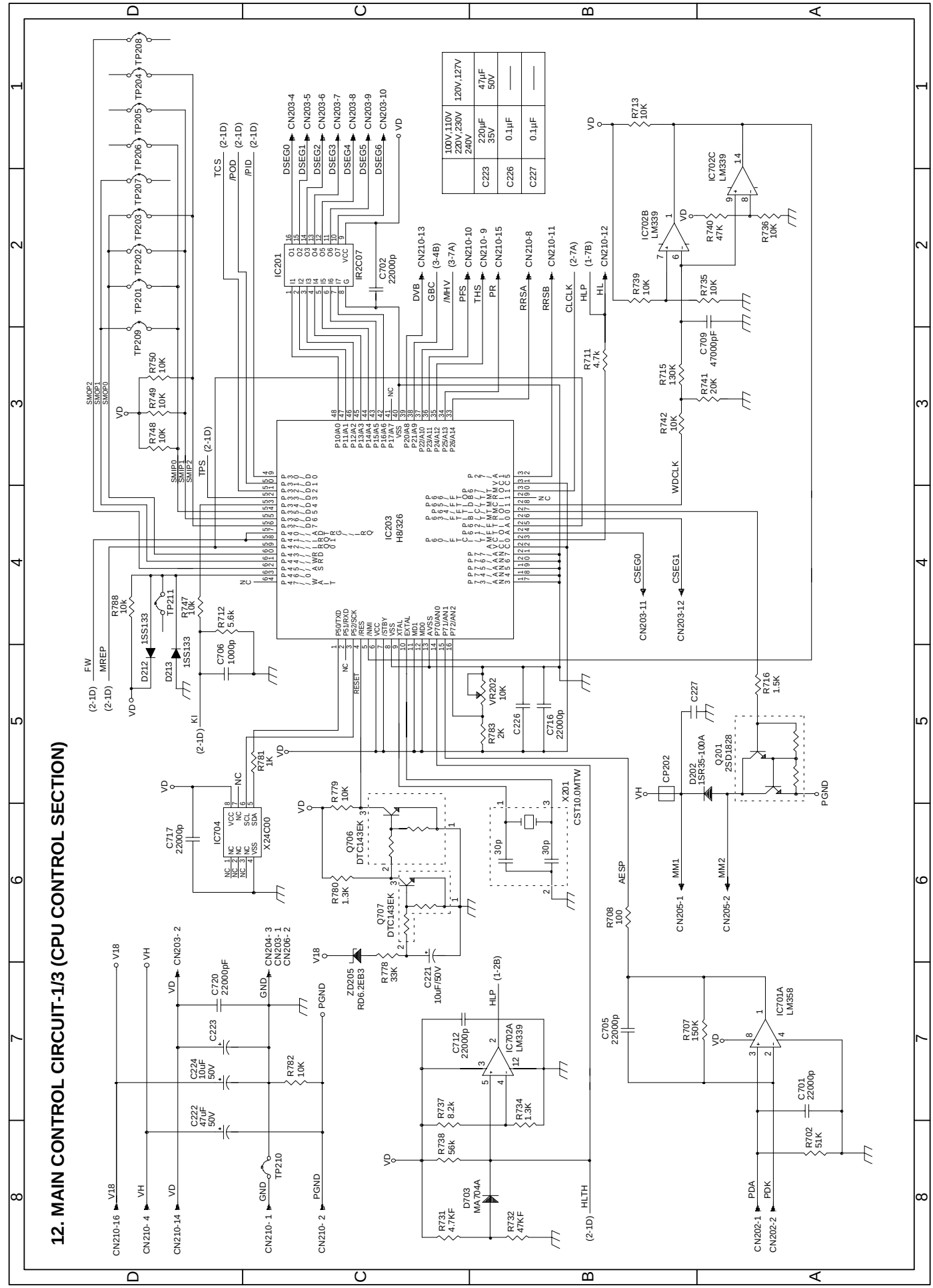
10. POWER SUPPLY PWB: 200V SERIES (EX. 3PIN PLUG): For power unit CPWBF1043FC∗∗ only

[Destination: Australia, Bahpain, Cyprus, Europe, Hong Kong, Kuwait, South Africa, Malaysia, North Yemen, Saudi Arabia, Singapore, Special countries, Sri Lanka]

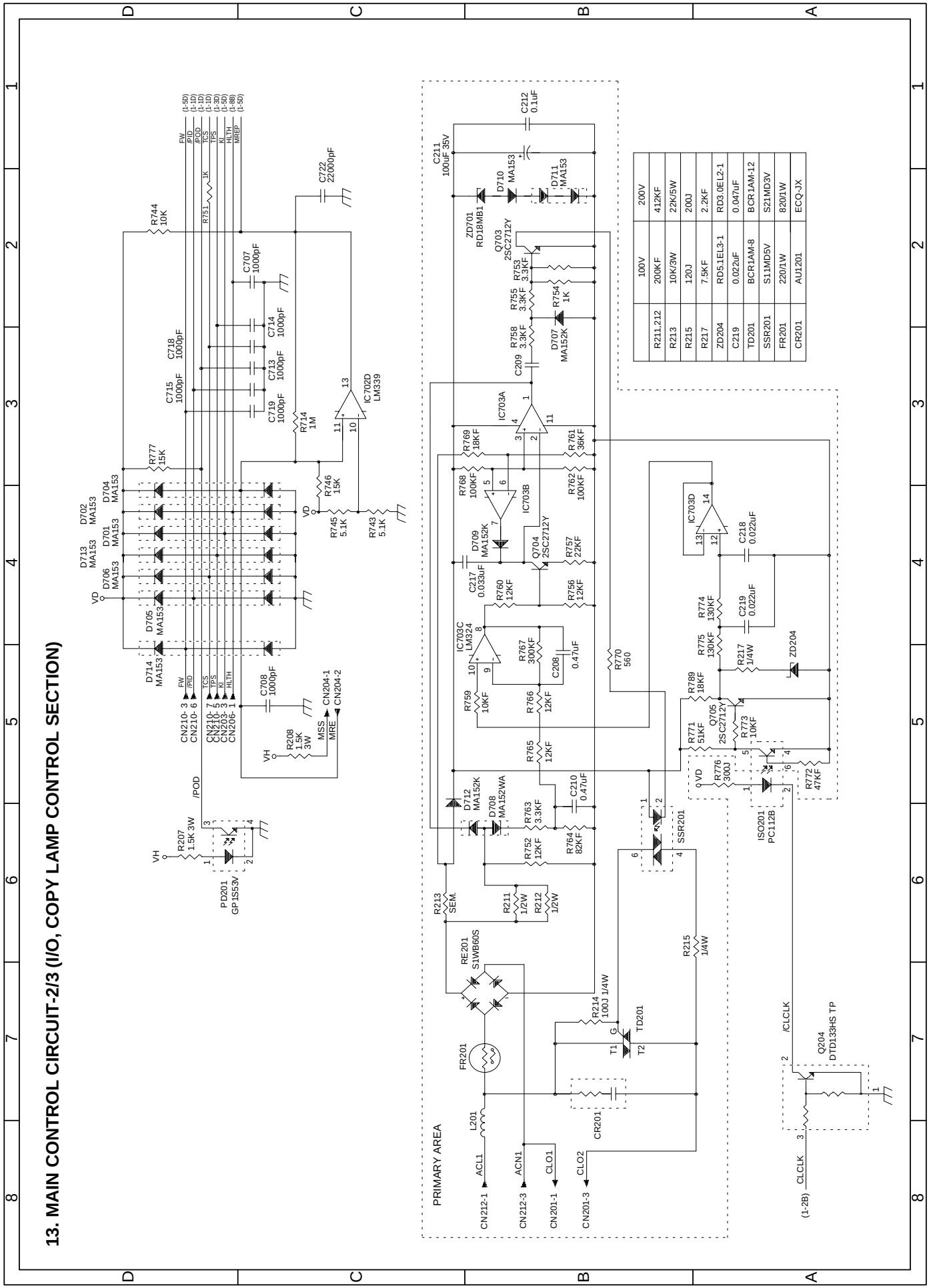
11. POWER SUPPLY PWB: 200V SERIES (EX. 2PIN PLUG): For power unit CPWBF1044∗∗ only

[Destination: Algeria, Argentina, Bangladesh, Chile Eqypt, Greece, India, Indonesia, Iran, Iraq, Jordan, Lebanin, Morocco, Nigeria, Oman, Paraguay, Paru, Philippines, Qatar, Syria, Thailand, Thnisia, Turkey, U.A.E, Uruguqy, West Africa]

12. MAIN CONTROL CIRCUIT-1/3 (CPU CONTROL SECTION)

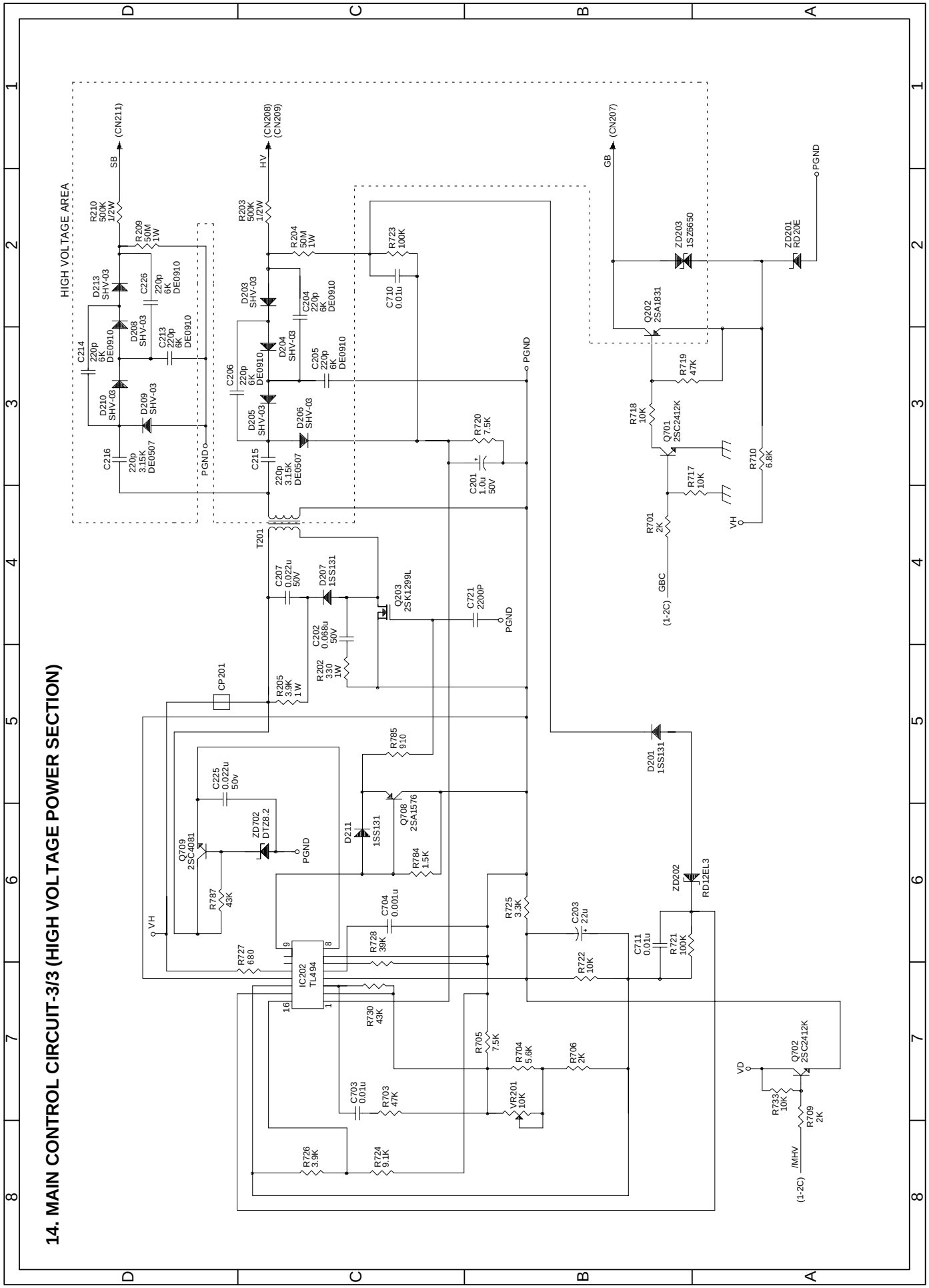


13. MAIN CONTROL CIRCUIT-2/3 (I/O, COPY LAMP CONTROL SECTION)



	100V	200V
R211,212	200KF	412KF
R213	10K/3W	22K/5W
R215	120J	200J
R217	7.5KF	2.2KF
ZD204	RD5.1EL3-1	RD3.0EL2-1
C219	0.022uF	0.047uF
TD201	BCR1AM-8	BCR1AM-12
SSR201	S11MD5V	S21MD3V
FR201	220/1W	820/1W
CR201	AU1201	ECQ-JX

14. MAIN CONTROL CIRCUIT-3/3 (HIGH VOLTAGE POWER SECTION)

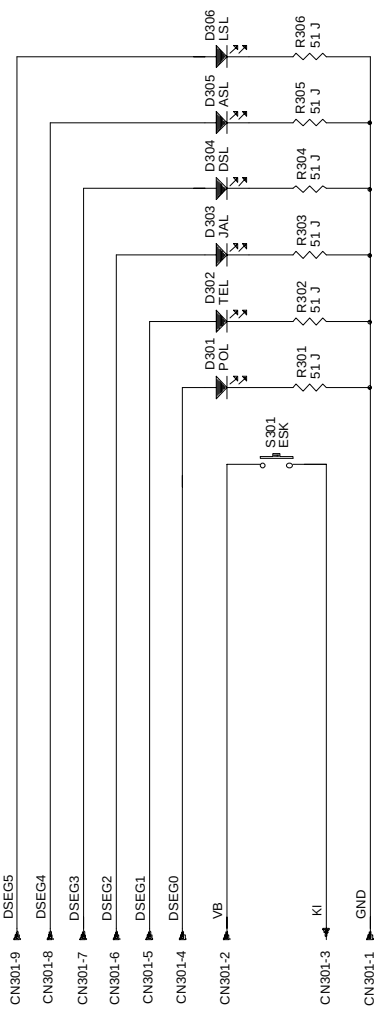


15. MAIN CONTROL PWB

TOP VIEW

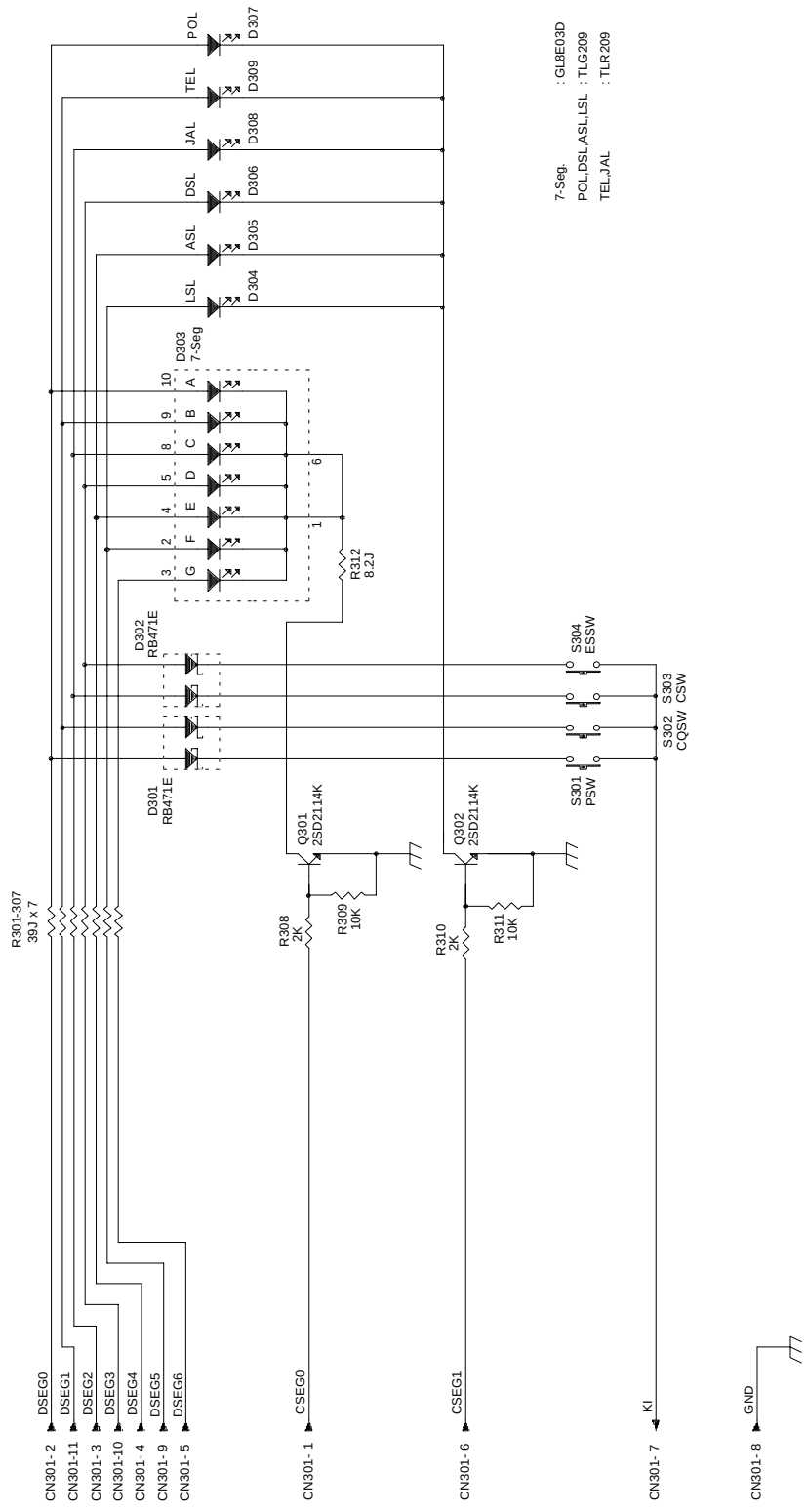
BOTTOM VIEW

16. OPERATION CIRCUIT/PWB-1: FOR Z-21

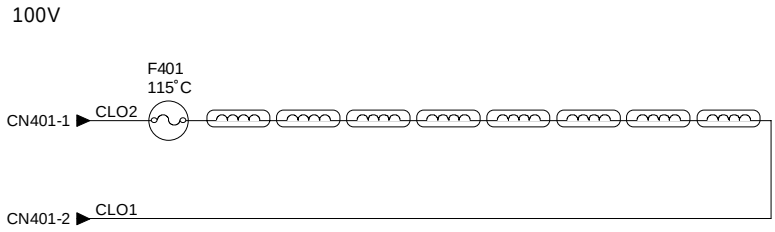


POL,DSL,ASL,LSL : TLG209
TEL,JAL : TLR209

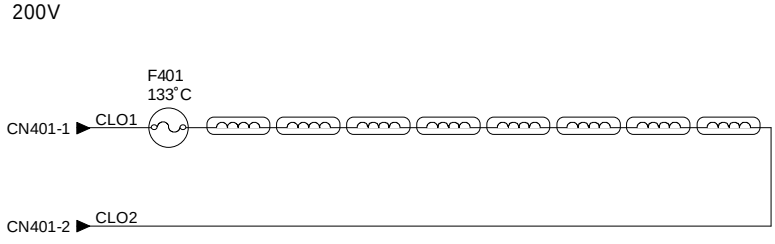
17. OPERATION CIRCUIT/PWB-2: FOR Z-26



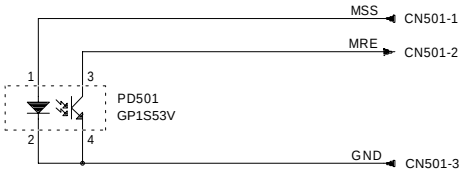
18. COPY LAMP CIRCUIT/PWB-1: 100V SERIES



19. COPY LAMP CIRCUIT/PWB-2: 200V SERIES

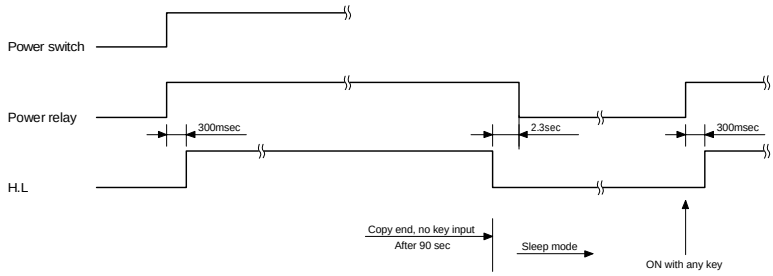


20. MES (Motor Encorder Sensor) CIRCUIT/P.W.B

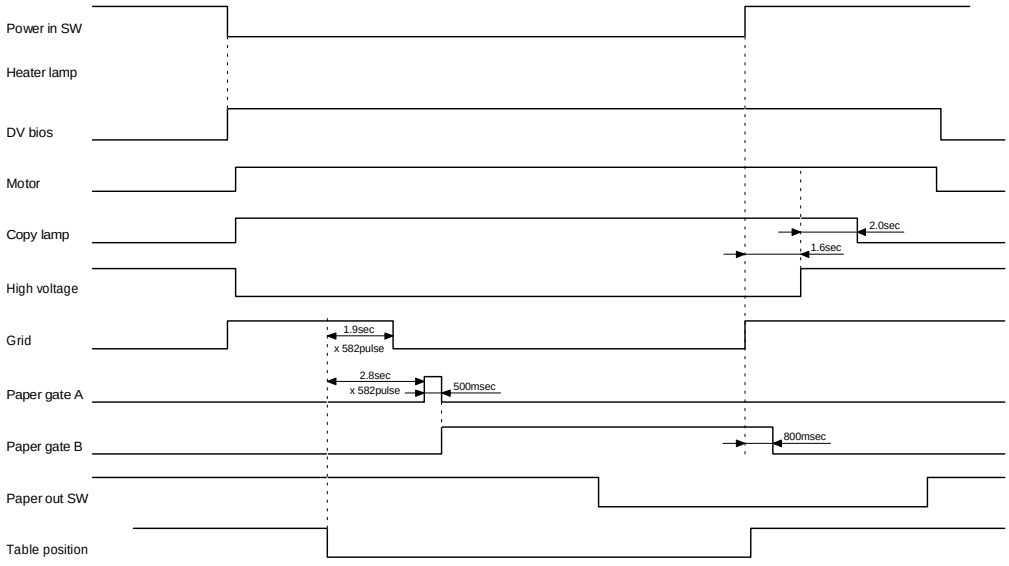


21. TIMING CHART

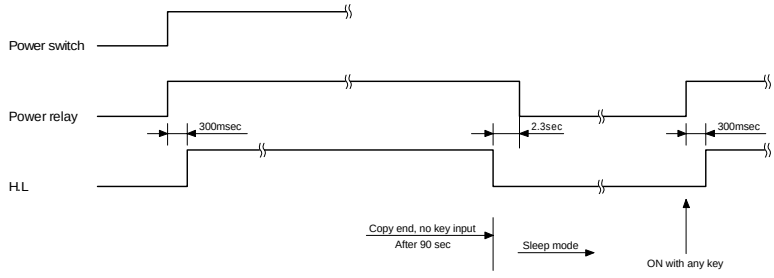
(Z-21)



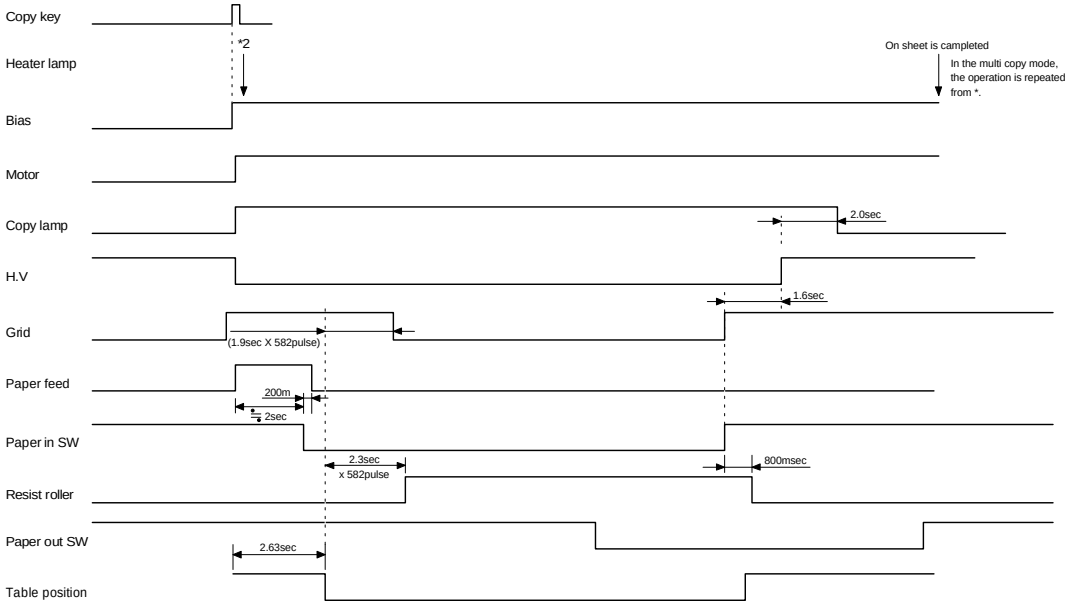
- A4, 8½" × 11" COPY



(Z-26)

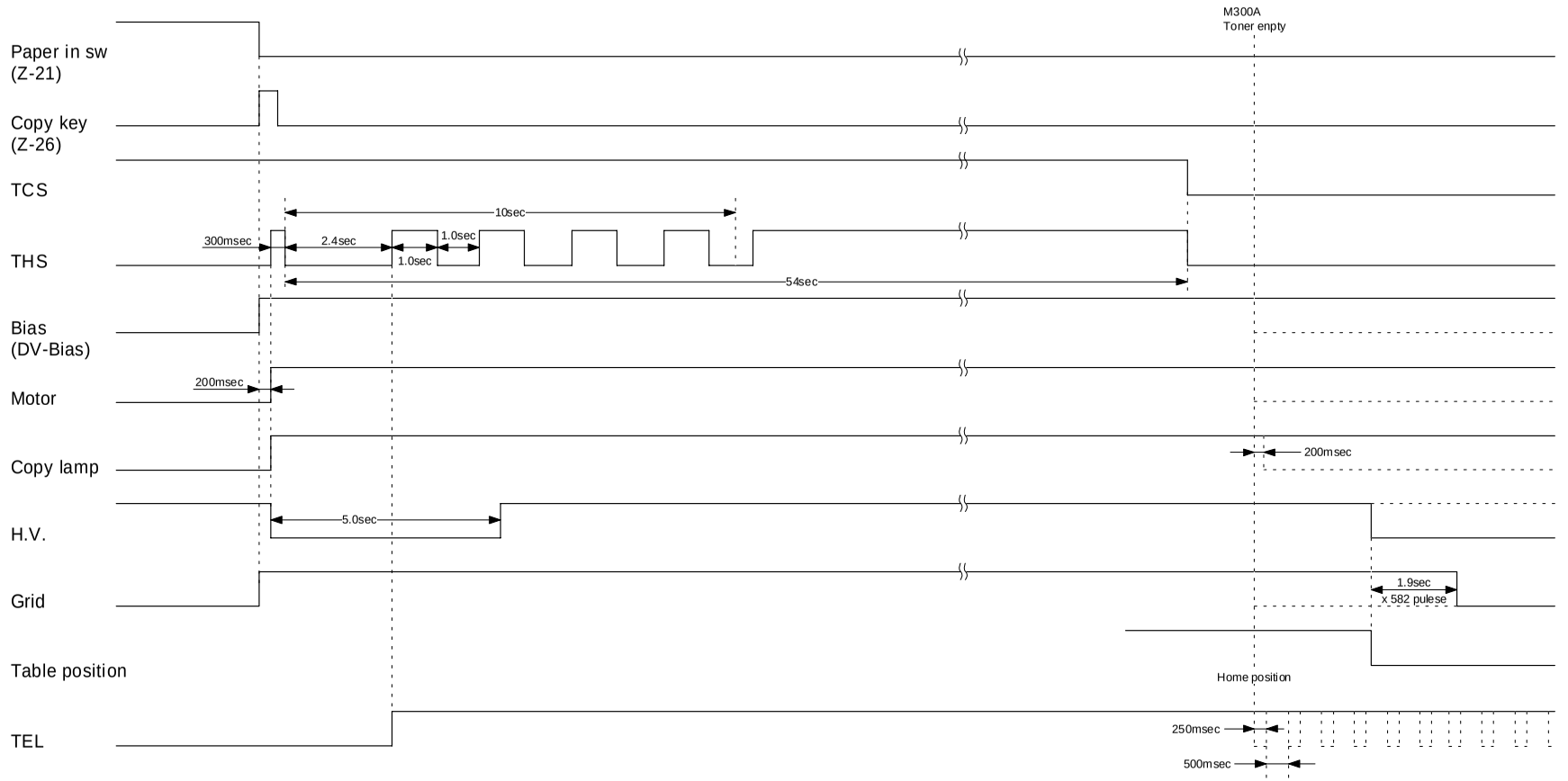


- A4, 8½" × 11" COPY

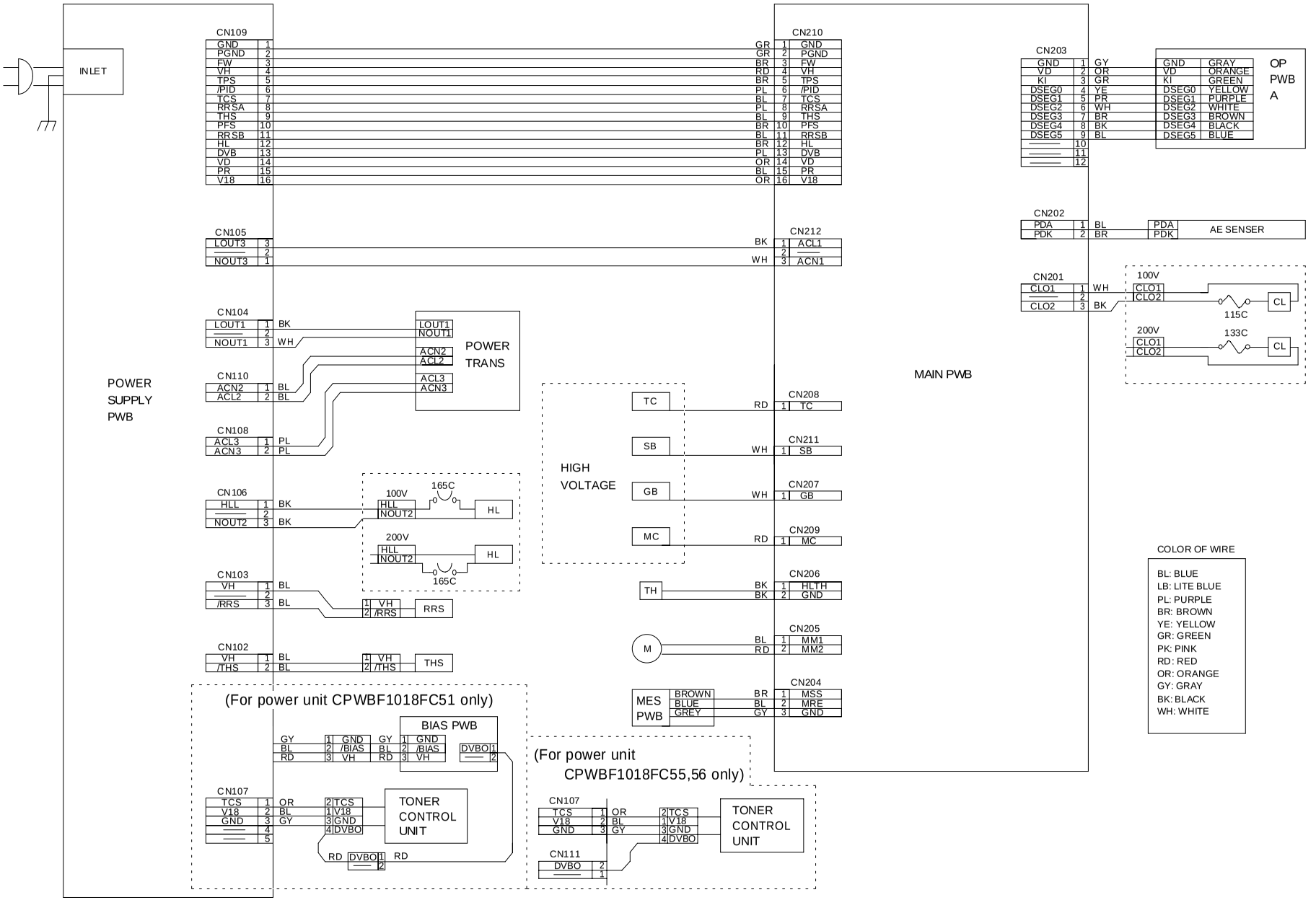


(Z-21/26)

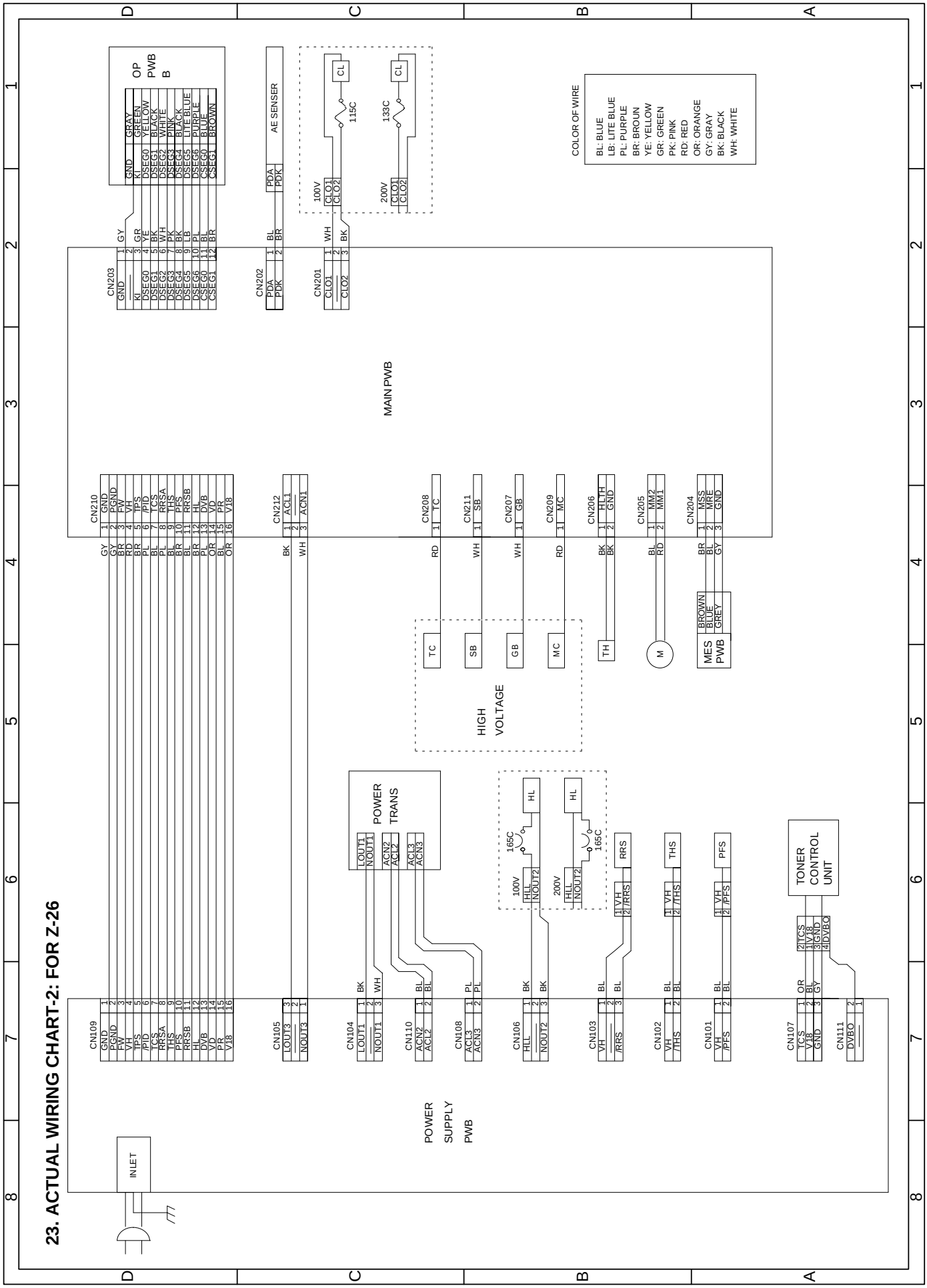
- When supplying toner



22. ACTUAL WIRING CHART-1: FOR Z-21



23. ACTUAL WIRING CHART-2: FOR Z-26



SHARP

COPYRIGHT © 1997 BY SHARP CORPORATION
All rights reserved.
Printed in Japan.
No part of this publication may be reproduced,
stored in a retrieval system, or transmitted.
In any form or by any means,
electronic, mechanical, photocopying, recording, or otherwise,
without prior written permission of the publisher.

SHARP CORPORATION
Printing Reprographic Systems Group
Quality & Reliability Control Center
Yamatokoriyama, Nara 639-11, Japan
1997 October Printed in Japan Ⓢ